

Latest publication of the Yorkshire Naturalists' Union
THE FRESHWATER CRUSTACEA OF YORKSHIRE
a faunistic & ecological survey
GEOFFREY FRYER

The crustacean fauna of Yorkshire reflects the great physiographic diversity of the region. Adopting an ecological approach, this book considers the Yorkshire fauna in relation to climate, topography, geology, soils and water chemistry, always keeping in mind that it is dealing with living organisms whose habits, requirements and physiological limitations determine exactly where they live.

Matters covered include the ecological background; faunal assemblages and their regional attributes; an analysis of the factors that determine distribution patterns, many of which are mapped; wide geographical aspects; and conservation. Large areas, such as the Pennines, Howgill Fells, North Eastern uplands and the lowland plains are surveyed. So too are localised regions including Whernside, the Malham area, lowland heaths, and the largest lakes, as well as habitats such as upland tarns, seepages, cold springs, small lowland ponds, inland saline waters. Notes are given on every species recorded, including parasitic forms.

Price £16.00 (plus £2.00 per copy p.&p.) Special offer to members of the Yorkshire Naturalists' Union £13.50 (plus £2.00 p.&p.)

Please make cheques payable to Yorkshire Naturalists' Union.

Available from: Professor M. R. D. Seaward, Department of Environmental Science, University of Bradford, Bradford BD7 1DP.

PUBLICATIONS FOR SALE

- A Fungus Flora of Yorkshire*. 1985. 296 pp. Hardback. £10.00 incl. p&p.
Butterflies and Moths of Yorkshire. 1989. 380 pp. Paperback. £17.50 incl. p&p. Unbound. £12.15 incl. p&p.
Mammals of Yorkshire. 1985. 256 pp. £7.50 incl. p&p.
Provisional Keys to British Plant Galls. 1986. 85pp. £5.50 incl. p&p.
First Yorkshire Lepidoptera Report in 'ARGUS' Spring 1997. £2.50 incl. p&p.
Moths and Butterflies of Spurn, 1995. 124 pp. £6 incl. p&p.

Cheques should be made payable to Y.N.U.

From: Mrs J. Payne, 15 Broad Lane, Cawood, Selby, North Yorkshire, YO8 0SQ
Telephone: 01757 268242

A QUARTERLY JOURNAL OF NATURAL HISTORY FOR THE NORTH OF ENGLAND

THE NATURAL
HISTORY MUSEUM

-7 JAN 1999

PURCHASED
GENERAL LIBRARY

**The Cuckoo Bees, *Sphecodes* (Hymenoptera: Halictidae), of
Watsonian Yorkshire — *Michael E. Archer***

**A History and Bibliography of Small Mammal Trapping Studies
in Watsonian Yorkshire — *C. A. Howes***

**Botanical Report for 1997 Flowering Plants and Ferns
— *D. R. Grant***

Published by the Yorkshire Naturalists' Union

Editor **M. R. D. Seaward**, MSc, PhD, DSc, FLS, The University, Bradford BD7 1DP

Notice to Contributors to 'The Naturalist'

Manuscripts submitted (two copies if possible) should be typed double-spaced on one side of the paper only with margins at top and left-hand side at least 2.5cm. Latin names of genera and species, but nothing else, should be underlined. S.I. Units should be used wherever possible. Authors must ensure that their references are accurately cited, and that the journal titles are correctly abbreviated. Volumes of *The Naturalist* for the years 1886 to 1975 have been retrospectively numbered 11 to 100 to accord with numbering before and after this period (see YNU *Bulletin* no. 3, pp. 21-22 1985); please cite these volume numbers in all references. Table and text-figures should be prepared on separate sheets of paper. Drawings and graphs, drawn about twice the linear size they are to appear, should be in jet-black Indian ink, and legends should not be written on the figures. Good clear photographs, suitably captioned, to accompany articles or as independent features are always welcome. **Publishable manuscripts not conforming to the above requirements will be returned for alteration.**

© Yorkshire Naturalists' Union — 1998

Single copies may be made of single articles in this journal provided that due acknowledgment is made and the copies are for non-profit making educational or private use. Copying of more than one article or multiple copying of a single article is forbidden unless special permission has been obtained from the Yorkshire Naturalists' Union. Permission is granted for the use of brief quotations in published work provided that acknowledgement of the source is clearly stated, but the use of substantial sections of text and any illustrative matter requires the express permission of the Yorkshire Naturalists' Union.

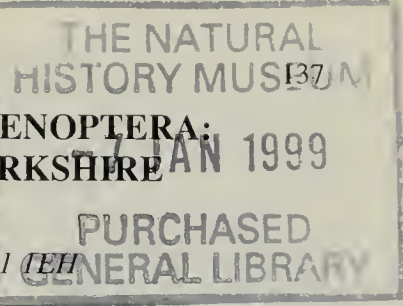
Subscriptions should be sent to:

Mr Richard Comley, 1 Highfield Rise, Stannington, Sheffield S6 6BS

All other YNU matters should be addressed to:

Mr John A. Newbould, Tapton House 30 Moorlands, Wickersley
Rotherham S66 0AT

The Naturalist is issued free to individual members of the Yorkshire Naturalists' Union and to Affiliated Societies.



THE CUCKOO BEES, *SPHECODES* (HYMENOPTERA: HALICTIDAE), OF WATSONIAN YORKSHIRE

MICHAEL E. ARCHER
17 Elmfield Terrace, Malton Road, York YO31 1EH

This paper gives an account of the records and distribution of the bee genus *Sphecodes* in Watsonian Yorkshire until the end of 1997.

Cuckoo bees of the genus *Sphecodes* Latreille are small to medium in size. They are almost hairless, black and red bees. Being cuckoos or cleptoparasites, they do not forage for pollen, so lack pollen-collecting hairs. Their hosts are the sweat (*Halictus* Latreille, *Lasioglossum* Curtis) and mining (*Andrena* Fab.) bees. The female cuckoo bee is often seen following its host back to its burrow and landing near the burrow entrance or even on the tumulus of excavated soil around the entrance. Males are sometimes seen swarming in bright sunshine around their emergence sites, waiting for the females to emerge.

Ten species of *Sphecodes* have been recorded in Watsonian Yorkshire (Table 1). Usually, they are regarded as a difficult group to identify. Willmer (1985) gives a key to the genera of bees, and Else (in prep.) will eventually provide up-to-date keys to the species to replace Perkins (1922) outdated ones. Warnche (1992) gives a key in German to western palearctic species, with maps showing distribution and drawings of the male genitalia, essential for identification.

TABLE 1
Records and distributional units of *Sphecodes* from Watsonian Yorkshire to 1997.

Species	No. records	No. localities	No. 1km	No. 10km	No. VCs
<i>S. crassus</i>	5	4	4	4	2
<i>S. ephippius</i>	13	11	11	8	2
<i>S. ferruginatus</i>	11	10	10	10	5
<i>S. geoffrellus</i>	173	68	65	40	5
<i>S. gibbus</i>	99	51	50	33	4
<i>S. hyalinatus</i>	88	41	38	26	4
<i>S. miniatus</i>	1	1	1	1	1
<i>S. monilicornis</i>	174	63	61	40	4
<i>S. pellucidus</i>	97	23	23	15	4
<i>S. puncticeps</i>	16	10	10	7	3
Total	677	129	123	66	5

LIFE CYCLES

After emerging in the spring fertilised females search for and enter the subterranean nests of their hosts, often in their absence. If the host is present, fighting may sometimes occur and the cuckoo may even kill it. On finding a host's cell, it is opened and the host's egg or young larva destroyed. The cuckoo then lays an egg on the food store, seals the cell and leaves. A new generation of adult males and female emerge during the summer when mating occurs; the females then enter overwintering sites and the males die.

In Yorkshire, the flight period of females has been recorded from May until September, with a few records from April. The flight period of the males is usually from July until September, with some records from June.

Further biological information about *Sphecodes* may be found in Plateaux-Quenu (1972), Iwata (1976), and Gauld and Bolton (1996).

HISTORICAL ACCOUNT

Work on the Yorkshire species of *Sphecodes* started with Smith (1852) who discovered two species: *S. gibbus* and *S. monilicornis* (as *S. subquadratus*). Roebuck (1877, 1907) repeated these records and added a further two species based on Smith's manuscript records: *S. ruficrus* (Erichson) (as *S. rufiventris*) and *S. ephippius*. Since these manuscript records were probably not based on specimens they are rejected.

Butterfield and Fordham (1931) listed ten species of *Sphecodes* as occurring in Yorkshire, indicating that all ten species had been recorded from Keighley and the surrounding district. The collection at Keighley Museum contains many specimens of *Sphecodes* from Keighley and the surrounding district. In the Keighley collection correctly identified specimens of the following species have been found: *S. ferruginatus*, *S. geoffrellus* (as *S. affinis*), *S. gibbus*, *S. monilicornis* and *S. pellucidus*. Specimens of *S. hyalinatus* also were found, often misidentified as *S. geoffrellus*. Of the other ten species no specimens were found of *S. crassus*, *S. ephippius*, *S. miniatus* and *S. reticulatus*. Butterfield and Fordham (1931) stated that records of *S. reticulatus* were doubtful. In view of the difficulties earlier workers experienced in identifying species of *Sphecodes* only the following species from Butterfield and Fordham (1931) can be accepted as new additions to Yorkshire: *S. ferruginatus*, *S. geoffrellus*, *S. hyalinatus* and *S. pellucidus*.

S. puncticeps was added to the Yorkshire list by Archer (1987), and *S. crassus* and *S. miniatus* by Archer (1990). *S. ephippius* was not recorded in earlier reports. The first record of *S. ephippius* was made by E. Broadhead during August 1980 at Askham Bog (SE54) and was identified by M. E. Archer.

THE RECORD DATA BASE

The ten species of *Sphecodes* are represented by 677 records from 129 localities in 123 1km squares or 66 10km squares in Watsonian Yorkshire (Table 1). A record is based upon a specimen where the data varies in one of the following: name, sex, locality and day-date of capture or observation. The author has seen the specimens of 635 (93.8%) of the records.

Watsonian Yorkshire may be considered to include, at least in part, 196 10km squares. Map 1 shows the number of species found in each 10km square. Records are known from 34% of the 10km squares. Records are scarce or absent from the following natural areas (Archer 1998): North Pennines, Tees Lowland, northern parts of the Pennine Dale Fringe and the Vale of York and Mowbray, and Holderness.

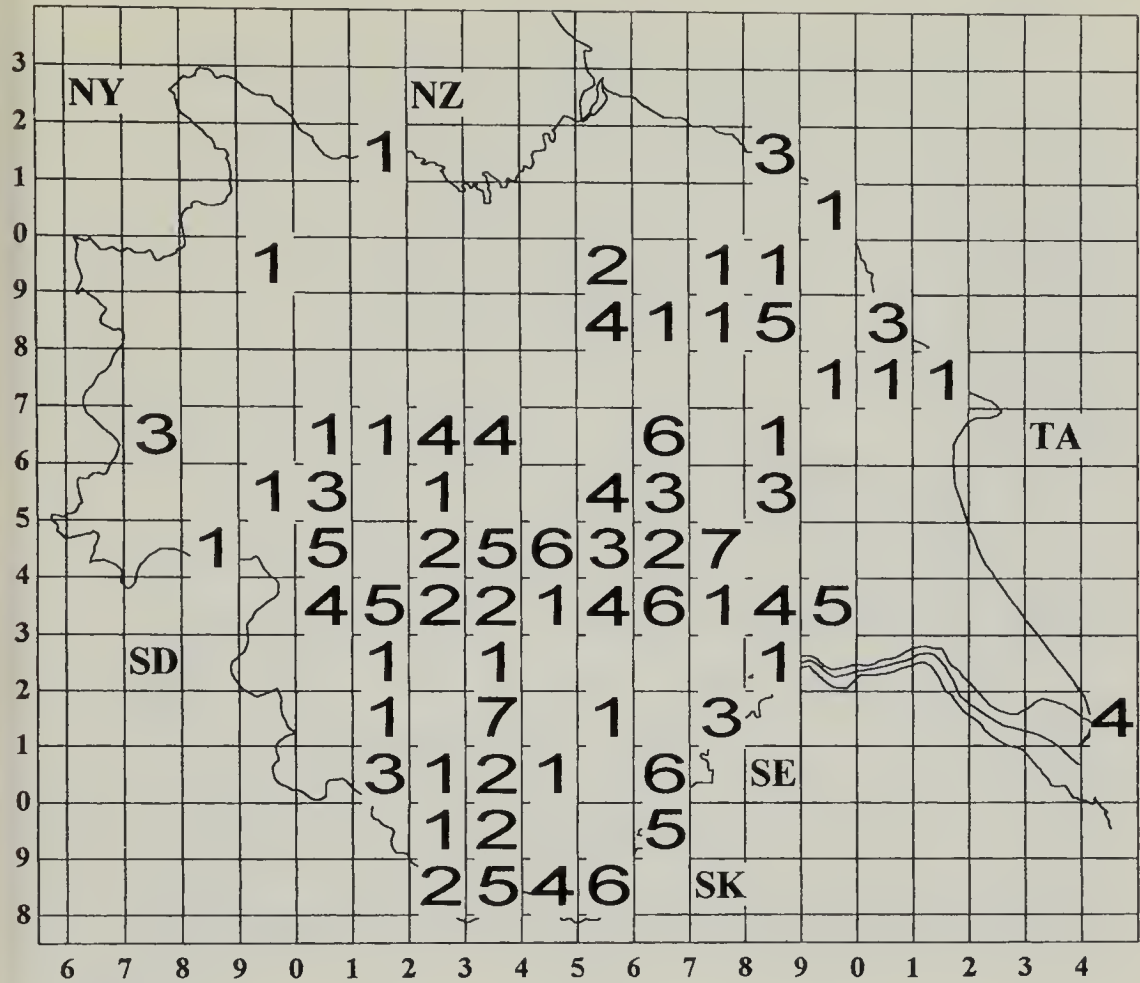
Using the number of records per species as a measure of abundance and the number of 1km squares in which each species occurs as a measure of range, a plot of abundance versus range can be made (Fig. 1). The correlation coefficient of 0.96 indicates a statistically highly significant relationship ($p < 0.001$), indicating that as the range of a species increases so does its abundance. The regression equation can be expressed as: $\text{Abundance} = 2.7 * \text{Range} - 6.09$.

Archer (1994) defined the term "local" as a species having relatively more records from relatively fewer locations. With reference to Fig. 1 and Table 1, *S. pellucidus* could be considered as a local species of open sandy habitats.

The thirteen localities with half or more of the Yorkshire list of species of *Sphecodes* are given in Table 2. Most of the localities are sandy sites but two localities, Cave Wold and Sutton, are calcareous sites.

Table 3 shows the number of records known from the 19th century and each decade of the 20th century until 1997. Few records have survived from the 19th century (0.3% of the dated records). Most of the records are from the 1970s, 1980s and 1990s (69.4% of the dated records), although there is an earlier peak of records during the 1910s.

Table 4 shows the eight most important collectors of records. R. Butterfield, with records from Keighley and the surrounding district, and H. H. Corbett, with records from Bessacar near Doncaster, were the dominant collectors during the 1910s and 1920s. W. J. Fordham, at Allerthorpe Common, and J. Wood at Shipley Glen and Holmehouse Wood near Keighley, were the dominant collectors during the 1920s and 1930s. The 1940s and 1950s



MAP 1

Number of species for each 10km square of *Sphecodes* from Watsonian Yorkshire.

TABLE 2

Localities from Watsonian Yorkshire to 1997 with five or more species of *Sphecodes*.

	No. Species	No. Records
Allerthorpe Common	6	57
Thornton Ellers	6	22
Cave Wold	6	20
Strensall Common	6	20
Skipwith Common	6	16
Stutton	6	11
Blaxton Common	5	35
Shipley Glen	5	30
Rossington Bridge	5	16
Pompocali	5	13
Barnby Dun	5	12
Seckar Moor	5	11
Haw Wood	5	7

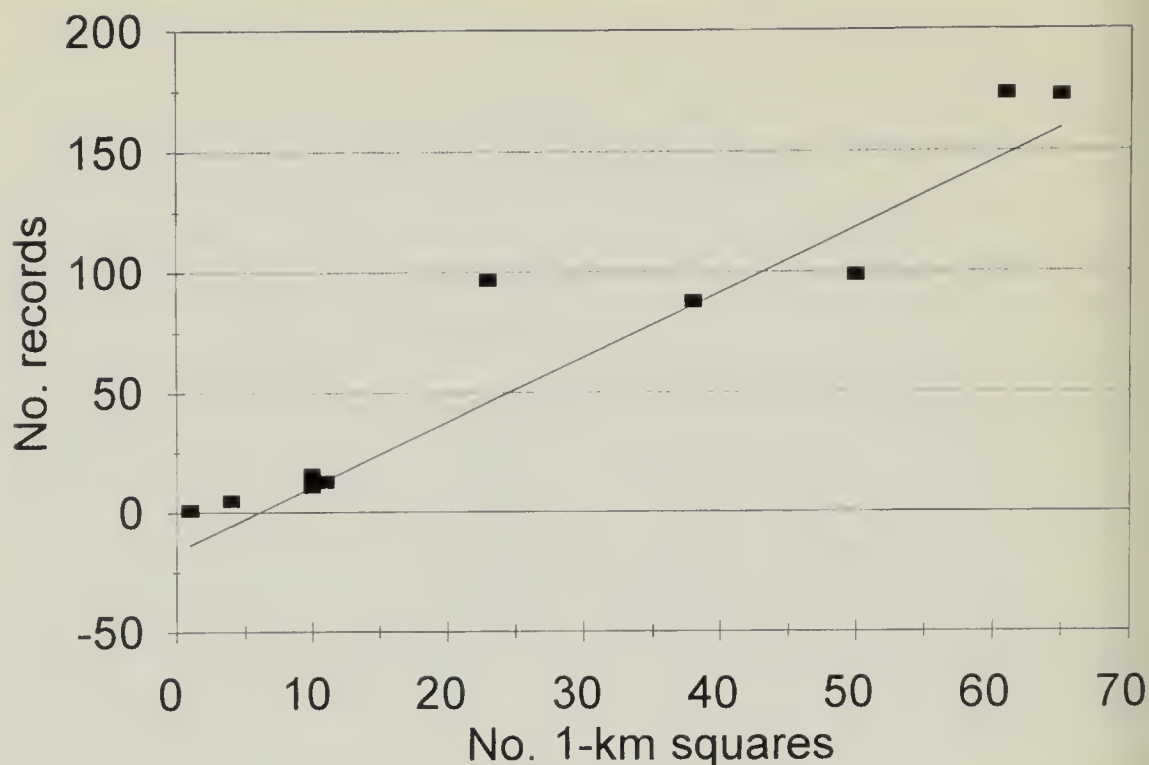


FIGURE 1

Abundance versus range of species of *Sphecodes* from Watsonian Yorkshire to 1997.

TABLE 3

Time source of records of *Sphecodes* from Watsonian Yorkshire to 1997.

	No. Records
pre-1990	2
1900s	5
1910s	88
1920s	23
1930s	37
1940s	14
1950s	6
1960s	30
1970s	68
1980s	199
1990s	198

were a low point for records but from the 1960s recording increased with four main collectors who recorded from a wide geographical range of localities.

Table 5 shows the sources of records with 3.4% from published and unpublished literature, 27.6% from museum collections, and 69.0% from private collections and sighted records. The collections at Keighley and Manchester University Museums have been particularly important sources of records. I acknowledge the curators of eight museums and 16 people with private collections who have provided records.

SPECIES ACCOUNTS

The information for each species is given in the following order: Biological name; Yorkshire Status (Archer 1993); Map number if given, or if no map the 10km squares are

TABLE 4
Names and years of activities of collectors with ten or more records
of *Sphecodes* from Watsonian Yorkshire to 1997.

	No. Records	Years of Activities
Archer, M. E.	389	1967-1997
Wood, J.	41	1920-1949
Butterfield, R.	34	1907-1919
Flint, J. H.	26	1958-1979
Burn, J. T.	15	1971-1986
Shaw, R.	15	1989-1993
Corbett, H. H.	14	1913-1918
Fordham, W. J.	14	1916-1936

TABLE 5
Sources or records of *Sphecodes* from Watsonian Yorkshire to 1997.

	No. Records
Doncaster Museum	7
Keighley Museum	90
Leeds Museum	2
Liverpool Museum	1
Manchester Museum	63
Rotherham Museum	1
Scarborough Museum	4
Sheffield Museum	19
Private collections	466
Sighted records	1
Literature records	23

given (B = records before 1970, A = records from 1970 onwards); Seasonal appearance of adults in Yorkshire (Table 6); Relative abundance of each sex in Yorkshire (Table 7); Possible hosts (Else, in prep.); National Status (Appendix 1); National seasonal appearance of adults (Else, in prep.). Locations are given for the Yorkshire rare species. There tend to be more records for females since their flight period of six months is longer than that of four months for the males. Due to identification problems the national status of the small species is poorly known.

TABLE 6
Seasonal appearance of adults of *Sphecodes* in Watsonian Yorkshire to 1997.

	Apr	May	Jun	Jul	Aug	Sep	Unknown
<i>S. crassus</i>			4			1	
<i>S. eplippius</i>		4	5	1	3		
<i>S. ferruginatus</i>		1	2	2	5		1
<i>S. geoffrellus</i>	3	44	44	46	25	10	1
<i>S. gibbus</i>	1	19	23	15	30	10	1
<i>S. hyalinatus</i>		18	27	11	28	4	
<i>S. miniatus</i>			1				
<i>S. monilicornis</i>	4	41	29	28	45	24	3
<i>S. pellucidus</i>	13	32	28	11	7	5	1
<i>S. pumticeps</i>			5	5	5	1	

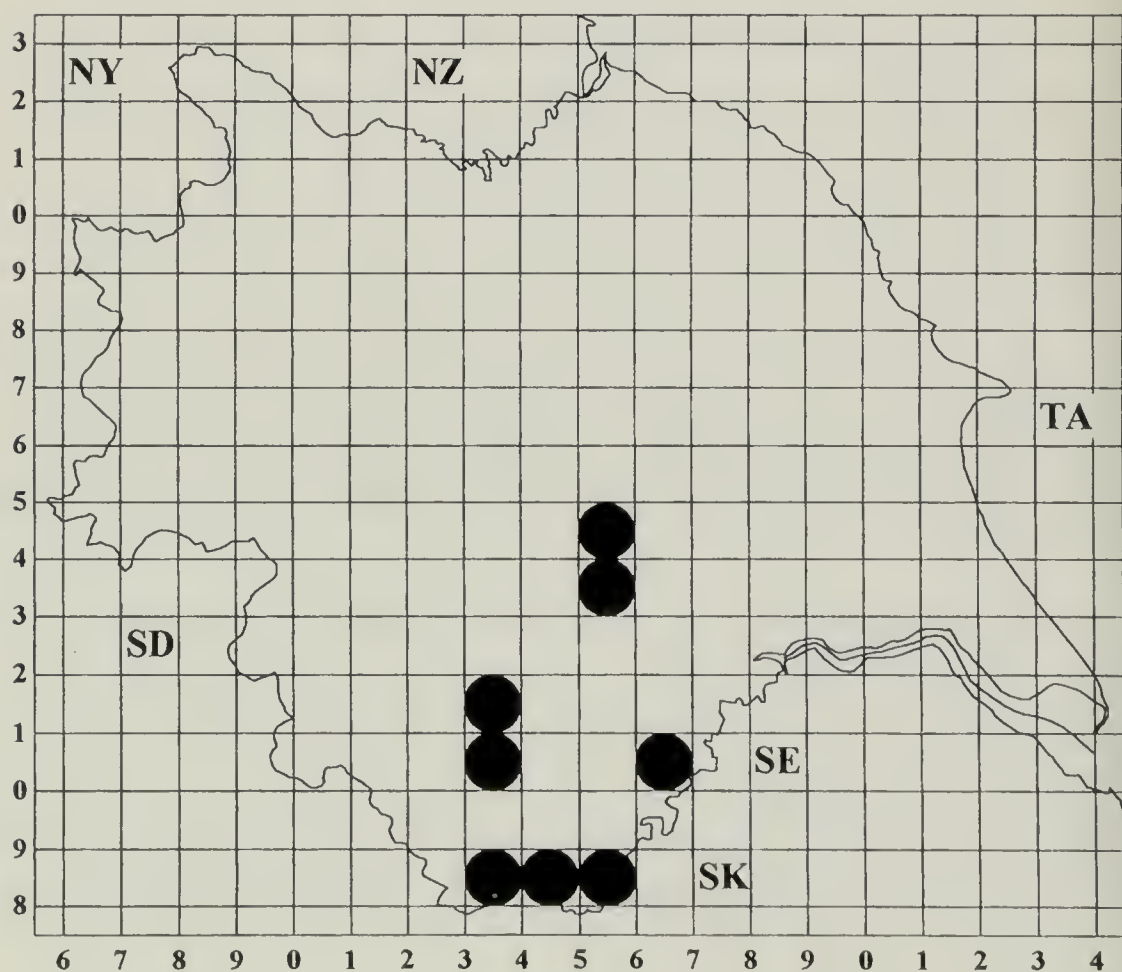
TABLE 7
Number of records of the sexes of *Sphecodes* from Watsonian Yorkshire to 1997.

	Females	Males	Unknown
<i>S. crassus</i>	5		
<i>S. ephippius</i>	12	1	
<i>S. ferruginatus</i>	3	6	2
<i>S. geoffrellus</i>	141	31	1
<i>S. gibbus</i>	66	26	7
<i>S. hyalinatus</i>	68	20	
<i>S. miniatus</i>	1		
<i>S. monilicornis</i>	126	39	9
<i>S. pellucidus</i>	86	8	3
<i>S. puncticeps</i>	13	2	1

Sphecodes crassus Thomson, 1870

Rare; SE31A (Woolley Edge Quarry), SE34A (Pompocali); SE36A (Burton Leonard Lime Quarries), SE44A (Stutton); June and September; only females known.

Lasioglossum fulvicorne, *L. nitidiusculum*, *L. parvulum*; nationally scarce; May until September.



MAP 2

Sphecodes ephippius (Linnaeus, 1767) (○ before 1970, ● 1970 onwards).

Sphecodes ephippius (Linnaeus, 1767)

Occasional; Map 2; May until August; only one male known; *Lasioglossum leucozonium*, *Andrena chrysosceles*, *A. barbilabris*; nationally widespread; April until September.

Sphecodes ferruginatus von Hagens, 1882

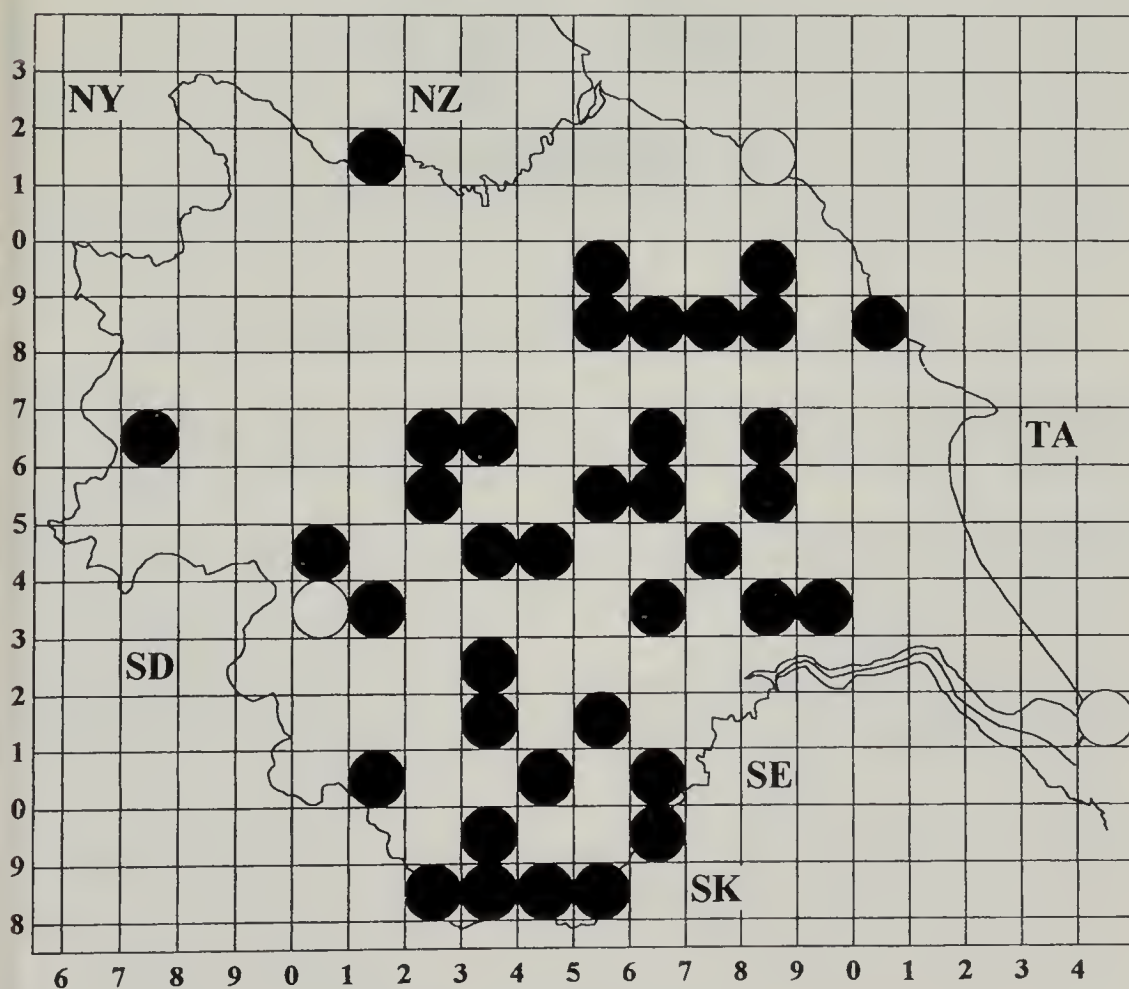
Rare; SD99B (Muker), SE03B (Harden Moor), SE04B (Keighley), SEO5B (Barden Moor), SE54B (Askham Bog), SE63B (Skipwith Common), SE66B (Strensall Common), SE74B (Allerthorpe Common), SE79A (Keldy Castle), SK58A (Lindrick Dale Quarry); May until August; from the few records males more numerous; *Lasioglossum fratellum*, *L. fulvicorne*, *L. rufitarse*; nationally scarce; May until September.

Sphecodes geoffrellus (Kirby, 1802) (= *fasciatus*)

Common; Map 3; April until September; females 4-5 times more numerous than males; *Halictus tumulorum*, *Lasioglossum leucopum*, *L. morio*, *L. nitidusculum*, *L. parvulum*, *L. rufitarse*, *L. villosulum*; nationally universal; April until September.

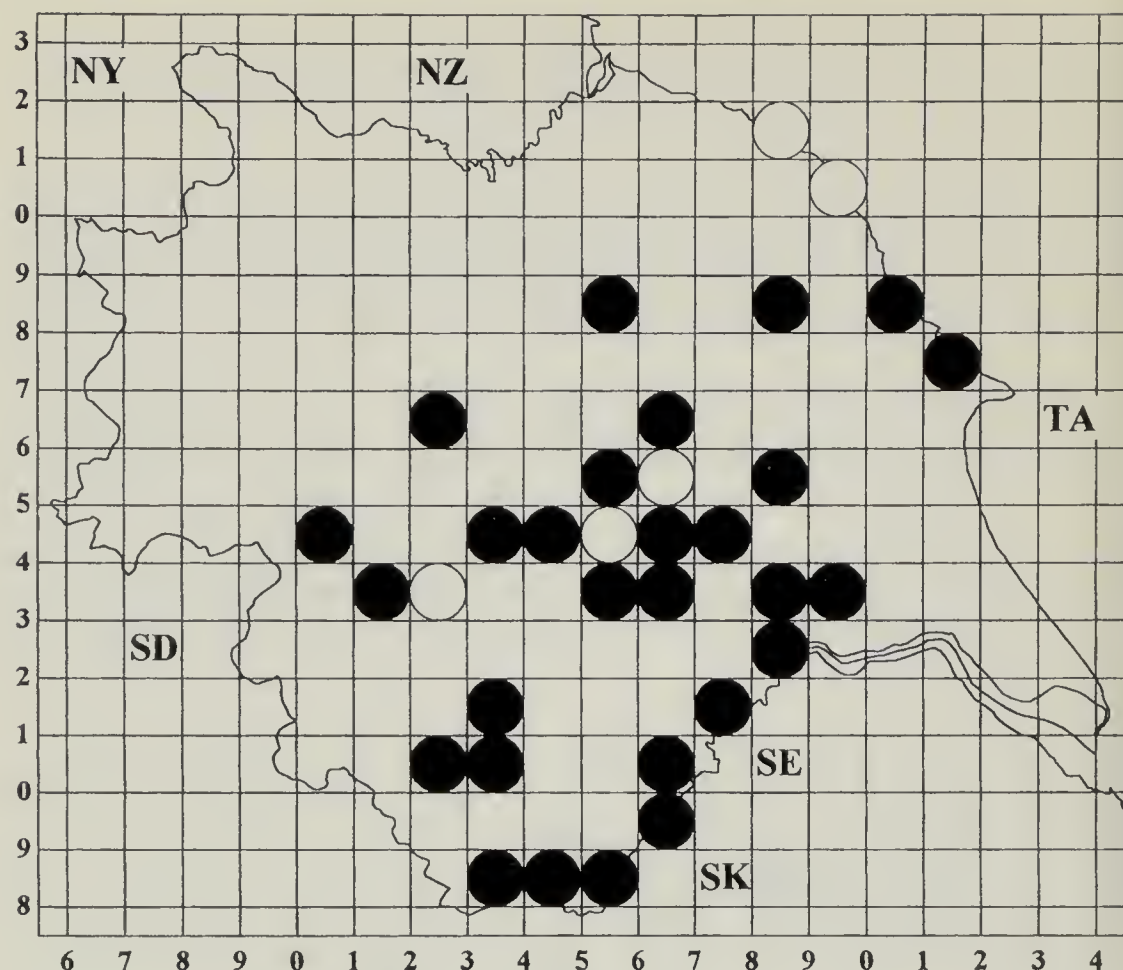
Sphecodes gibbus (Linnaeus, 1758)

Frequent; Map 4; April until September; females 2-3 times more numerous than males; *Halictus rubicundus*; nationally widespread; April until September.



MAP 3

Sphecodes geoffrellus (Kirby, 1802) (○ before 1970, ● 1970 onwards).



MAP 4

Sphecodes gibbus (Linnaeus, 1758) (○ before 1970, ● 1970 onwards).

Sphecodes hyalinatus von Hagens, 1882

Frequent; Map 5; May until September; females 3-4 times more numerous than males; *Lasioglossum fratellum*, *L. fulvicorne*; nationally widespread; April until September.

Sphecodes miniatus von Hagens, 1882

Rare; TA41B (Spurn Point); June; only one female record; *Lasioglossum nitidiusculum*; nationally scarce; May until September.

Sphecodes moulicornis (Kirby, 1802)

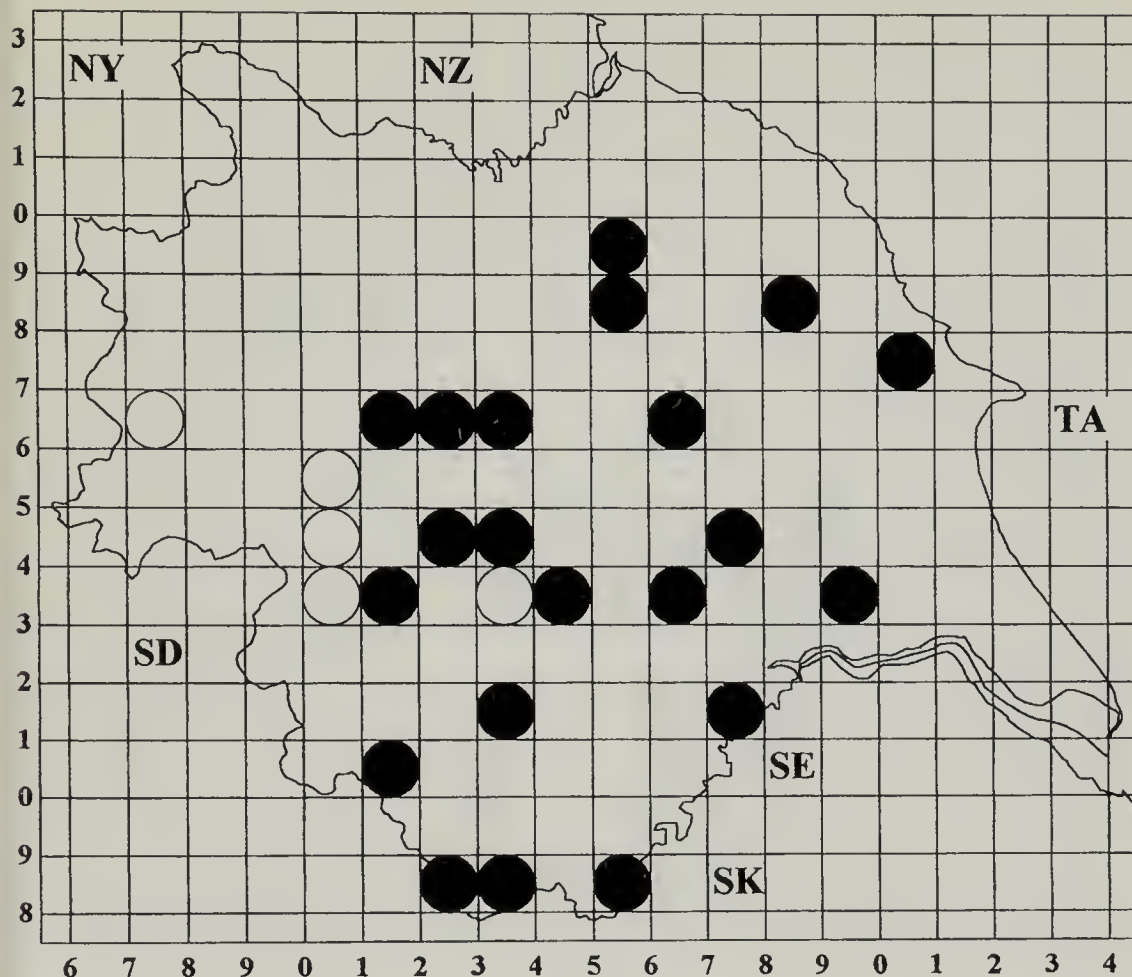
Frequent; Map 6; April until September; females 3-4 times more numerous than males; *Halictus rubicundus*, *Lasioglossum albipes*, *L. calceatum*, *Andrena barbilabris*; nationally universal; April until September.

Sphecodes pellucidus Smith, 1845

Frequent; Map 7; April until September; females 10-11 times more numerous than males; *Andrena barbilabris*; nationally widespread; May until October.

Sphecodes puncticeps Thomson, 1870

Rare; SE44A (Stutton), SE60A (Armthorpe, Barnby Dun, Blaxton Common, Sandall Beat Wood), SE71A (Thorne Moor), SE74A (Thornton Eilers), SE93A (Cave Wold), SK69A (Rossington Bridge), TA41A (Spurn Point); June until September; only two males known;



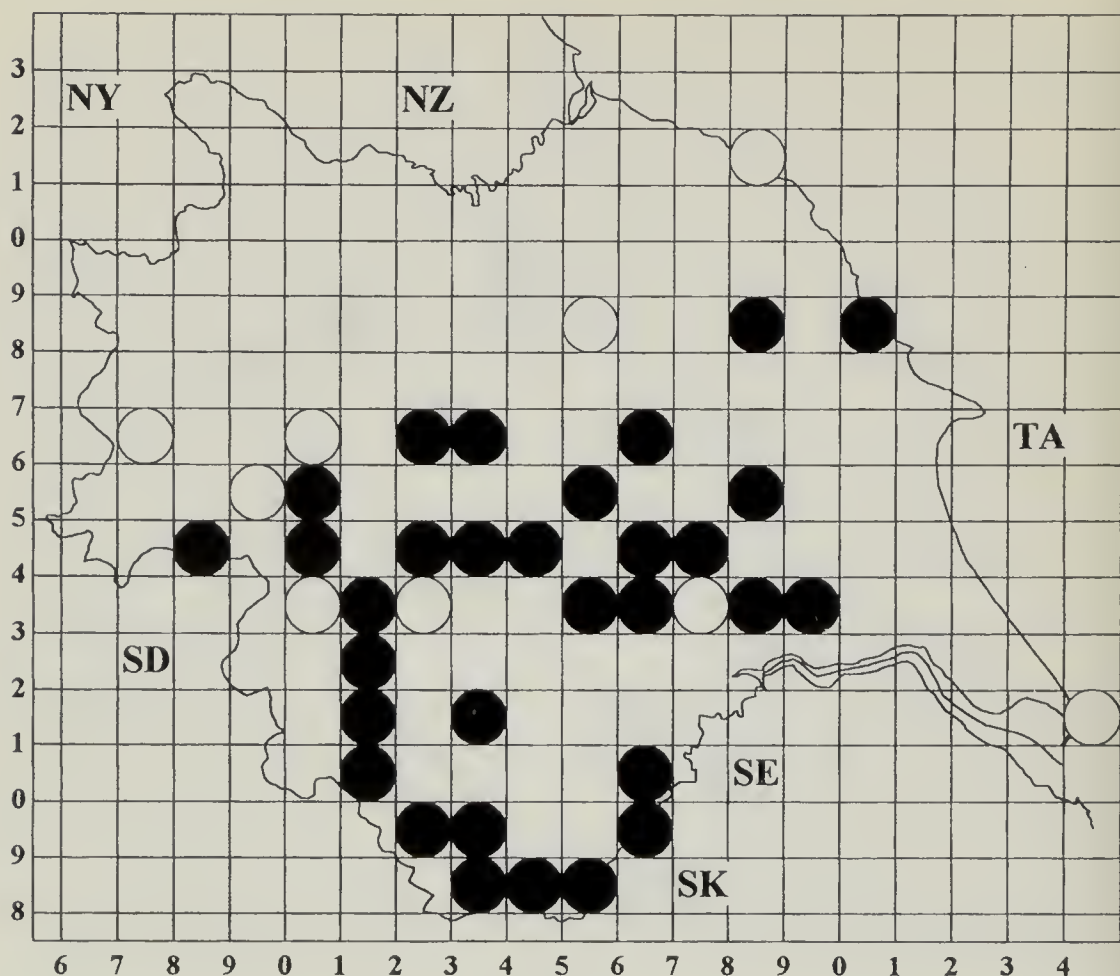
MAP 5

Sphecodes hyalinatus von Hagens, 1882 (○ before 1970, ● 1970 onwards).

Lasioglossum fulvicorne, *L. nitidiusculum*, *L. parvulum*, *L. punctatissimum*, *L. villosulum*; nationally widespread; May until October.

REFERENCES

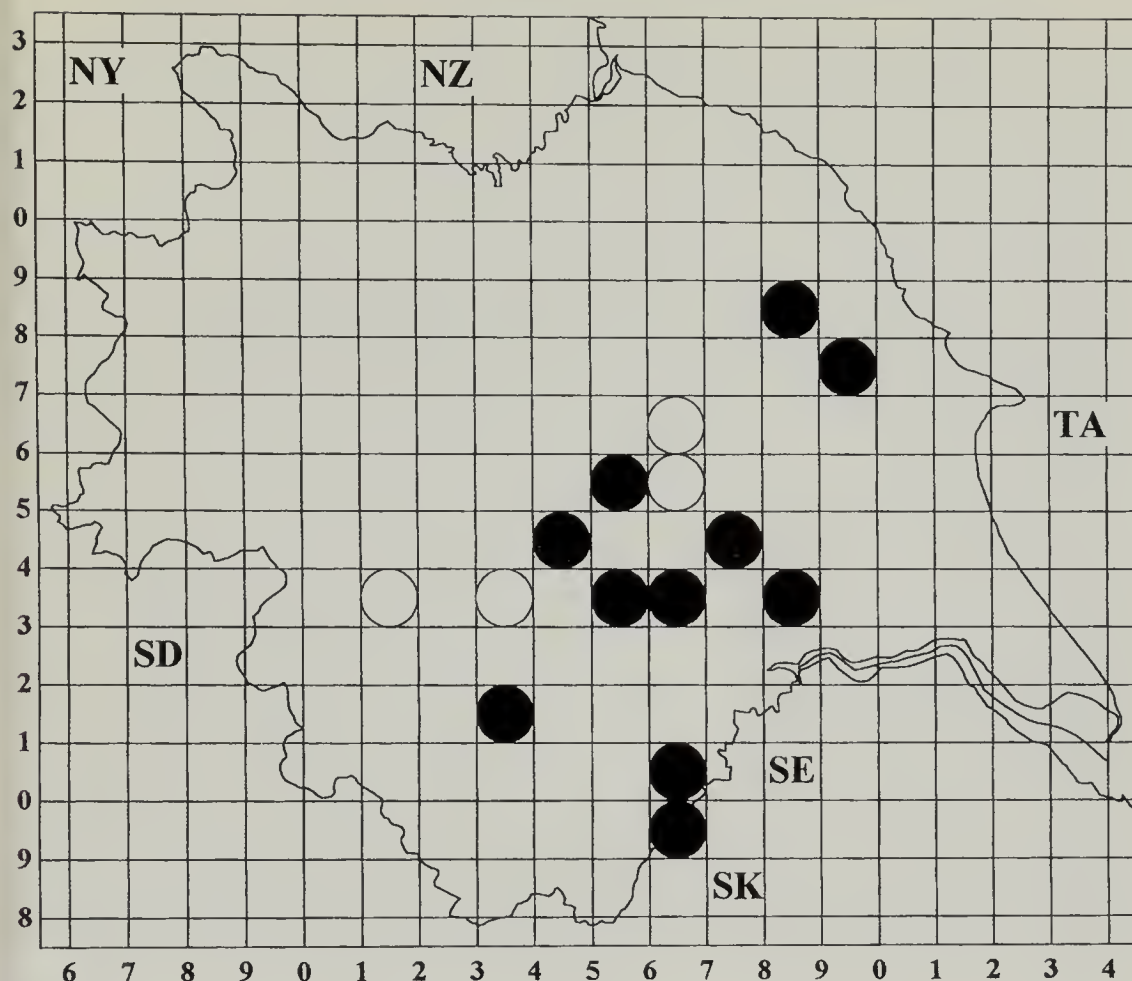
- Archer, M. E. (1987). Recorder's second report on the Aculeate Hymenoptera in Yorkshire. *Naturalist* **112**: 109-112.
- Archer, M. E. (1990). Recorder's third report on the Aculeate Hymenoptera in Watsonian Yorkshire. *Naturalist* **115**: 105-107.
- Archer, M. E. (1993). Recorder's fourth report on the Aculeate Hymenoptera in Watsonian Yorkshire and the development of a quality scoring system. *Naturalist* **118**: 13-15.
- Archer, M. E. (1994). Recorder's fifth report on the Aculeate Hymenoptera in Watsonian Yorkshire. *Naturalist* **119**: 73-77.
- Archer, M. E. (1998). *Threatened wasps, ants and bees (Hymenoptera: Aculeata) in Watsonian Yorkshire. A Red Data Book*. Occasional Paper No. 2: 1-68. PLACE Research Centre, University College of Ripon and York St. John, York.
- Butterfield, R. and Fordham, W. J. (1931). Aculeate Hymenoptera of Yorkshire. Part 4. *Naturalist* **56**: 233-236.
- Else, G. R. (In Prep). *British Bees. Hymenoptera, Apidae*.
- Gauld, I. and Bolton, B. (eds) (1996). *The Hymenoptera* 2nd. edn. The Natural History Museum, London.



MAP 6

Sphecodes monilicornis (Kirby, 1802) (○ before 1970, ● 1970 onwards).

- Iwata, K. (1976). *Evolution of Instinct. Comparative ethology of Hymenoptera*. Amerind, New Delhi.
- Perkins, R. C. L. (1922). The British species of *Halictus* and *Sphecodes*. *Entomologist's monthly Magazine* **58**: 46-52, 94-101, 167-174.
- Pienkowski, M. W., Bignal, E. M., Galbraith, C. A., McCracken, D. I., Stillman, R. A., Boobyer, M. G. and Curtis, D. J. (1996). A simplified classification of land-type zones to assist the integration of biodiversity objectives in land-use policies. *Biological Conservation* **75**: 11-25.
- Plateaux-Quenu, C. (1972). La Biologie des Abeille Primitives. Collection 'Les Grands Problemes de la Biologie' Monographie **11**: 1-200.
- Roebuck, W. D. (1877). Yorkshire Hymenoptera. Part 1. *Transactions Yorkshire Naturalists' Union* **1877**: 23-48.
- Roebuck, W. D. (1907). Hymenoptera, in *Victoria County History of Yorkshire* **1**: 210-219.
- Smith, F. (1852) Captures of Hymenoptera in Yorkshire. *Zoologist* **10**: 3625-3626.
- Warneke, K. (1992). Die westpalaarktischen Arten der Bienengattung *Sphecodes* Latr. (Hymenoptera, Apidae, Halictinae). *Bericht der Naturf. Gesellsch Augsburg* **52**: 9-64.
- Willmer, P. (1985). *Bees, Ants and Wasps. A key to genera of the British Aculeates*. Field Studies Council. Occasional Publication No. 7: 1-28.



MAP 7

Sphecodes pellucidus Smith, 1845 (○ before 1970, ● 1970 onwards).

APPENDIX 1

The national statuses of species of solitary aculeate wasps and bees of Archer for England, Wales and Scotland, excluding Ireland and the Channel Islands.

Very rare – Species found in 1-15 10km squares, 1970 onwards.

Rare – Species found in 16-30 10km squares, 1970 onwards.

Scarce – Species found in 31-70 10km squares, 1970 onwards.

Restricted, *Widespread* and *Universal* species are found in more than 70 10km squares, 1970 onwards.

Restricted – Species only found in Southern England, South-West and Southern Coasts; about half of England (Institute of Terrestrial Ecology (I.T.E.) Land Classification Groups 1 and 2; Pienkowski *et al.* 1996).

Widespread – Species found in I.T.E. Land Classification Groups 3 and 4 (Midland Lowlands and Central Coasts) besides Groups 1 and 2; about three-quarters of England, lowland Wales and south-west Scotland; Northumbria is excluded.

[Strictly, these definitions of restricted and widespread are for southern restricted and widespread species; in practice, northern restricted and widespread species can occur.

Universal – Species found throughout England, Wales and more extensively in Scotland, including further I.T.E. Land Classification Groups 5 and 6 (Low Moorlands and Northern Uplands), but particularly Groups 7 and 8 (Northern Lowlands and North-western Scaboard).

BOOK REVIEWS

Threatened Wasps, Ants and Bees (Hymenoptera: Aculeata) in Watsonian Yorkshire. A Red Data Book by Michael E. Archer. Pp. 68, with 20 line drawings. Occasional Paper No. 2 of the PLACE Research Centre, University College of Ripon and York St John. 1998. Obtainable from Dr Margaret Atherden, University College of Ripon and York St John, Lord Mayor's Walk, York YO31 7EX. £3.00 laminated paperback (£3.50 p. & p.).

Michael Archer's compact handbook, illustrated by elegant line drawings of whole insects by Steven Falk and Helmut Riemann, provides a rigorous and analytical assessment of the status, distribution, behavioural characteristics, habitat and resource requirements of some 170 endangered wasps, ants and bees within Watsonian Yorkshire (vice-counties 61 to 65). In so doing, Dr Archer breaks new ground in putting this data, painstakingly amassed from literature searches, 74 collectors and 12 museums, to work for the benefit of the conservation management of these highly complex and sophisticated creatures.

For those institutions, local authorities, organisations and individuals engaged in producing biodiversity assays and management plans on a regional, natural areas, local or parochial scale, this is a necessary work of reference of the highest standard. For specialists of all other taxonomic groups, Dr Archer's work stands as a model or blueprint for the application of regional data to the requirements of site protection and biodiversity action planning which provides well interpreted biological records at the service of our native fauna.

The appendices give a complete listing of the 321 species of aculeates recorded in Yorkshire. More crucially, they also provide the names, grid references and natural areas of sites with threatened species. The numbers of threatened species found at each site are also listed.

Financially supported by the Yorkshire Naturalist's Union, Yorkshire Philosophical and Literary Society, and the North and East Yorkshire Team of English Nature, this publication demonstrates the crucial importance of organisations like the YNU in forming a focus for specialist taxonomists, scientific journals like *The Naturalist* for the publication of reviews and analyses of records and institutions like the PLACE Research Centre for facilitating the culmination of this endeavour by producing such a practical monograph.

Within moments of receiving this publication at Doncaster Museum it was pressed into service in protecting one identified 'endangered species' site from a pipeline development, another site from an unsympathetic planning application, providing Red Data Book species information for some 20 local authority 'Sites of Special Scientific Interest' and in forming part of Doncaster's Biodiversity Action Plan – not bad for £3.50!

CAH

A New Voyage Round the World. The journal of an English buccaneer by William Dampier. Pp. xii + 294 (with numerous b/w plates), 8 pp. of colour plates & ribbon bookmark. Hummingbird Press. 1998. £19.95 hardback.

William Dampier (1651-1715), naturalist, anthropologist, explorer and pirate, circumnavigated the globe, being the first recorded Englishman to visit Australia, wrote a treatise on winds and tides, and collected plants from many parts of the world (now housed in The Natural History Museum and Oxford University). His *New Voyage Round the World*, first published in 1697, is a classic of travel literature which provides not only a colourful account of his adventures but also a first-hand record of the exotic plants, animals and native customs of many of the places he visited between 1679 and 1691. Rather interestingly, Dampier's work was a major inspiration for Defoe's *Robinson Crusoe* and Swift's *Gulliver's Travels*. This well produced work has an editorial introduction by Mark Beken and a foreword by Giles Milton. An appendix contains details of the plants and animals described by Dampier, a glossary of words and phrases, and a gazetteer of place-names; curiously there is no index. This classic, long out of print, is a fascinating account of one referred to as "the mildest-mannered man that ever scuttled ship or cut a throat".

MRDS

A HISTORY AND BIBLIOGRAPHY OF SMALL MAMMAL TRAPPING STUDIES IN WATSONIAN YORKSHIRE

C. A. HOWES

Museum and Art Gallery, Doncaster DN1 2AE

INTRODUCTION

In the process of preparing data for the Mammal Society's 'Look Out For Mammals' national computer data base, some 81 literature references were located which referred to small mammal trapping projects within Watsonian Yorkshire. Since some of these works in themselves represent the culmination of a considerable investment of time, effort and expertise, collectively they form a substantial corpus of biological information. In compiling this bibliography and indexed catalogue of survey sites, the following review seeks to draw attention and facilitate access to this valuable resource.

HISTORICAL BACKGROUND: RAT, MOUSE AND MOLE 'PEST' CONTROL

The protection of store foods from predation and contamination by rodents, be it in the barn or the kitchen, dates back as long as human populations have harvested and stored food and as long as small mammals have developed synanthropic tendencies.

Rodent control for public health reasons probably only dates from the 19th century when links were found between rodents and certain human diseases. However, the use of traps for 'pest' control purposes has a long and often grisly history, museum collections of 'vermin' traps giving testimony to the ingenuity invested in this necessary activity. The 'agricultural revolution' and the 'Enclosure Award' movement of the 18th and 19th centuries led to community mole catchers being employed and paid for out of the 'Parish' rate.

Although the motivations for small mammal trapping have traditionally been for population control rather than scientific investigation, the examination and analysis of records of numbers caught or bounty money paid gives evidence of historic distribution and may possibly produce statistical indications of population changes.

EARLY USE OF TRAPPING DATA: SPRING TRAPS

The ubiquitous spring 'break-back' type mouse trap was used to great effect by Michael Clegg to both control and examine house mouse (*Mus musculus*) populations at the Warren Cottage, Spurn Peninsula (Clegg, 1963) and in 'pit pony' stalls down collieries in the Barnsley, Doncaster and Wakefield areas (Clegg, 1965), many of the resultant specimens being deposited in the collections at Doncaster Museum. Though the domestic use of spring traps for rodent control is widespread, few people bother to record the results; Pollard (1972), however, recorded the relative frequencies of seven species of small mammal trapped in a rural garden shed in Cloughton from 1960 to 1969.

BOTTLING FOR MAMMALS

When Morris and Harper (1965) showed that without expenditure on costly traps, the remains of small mammals could readily be located in discarded bottles, Michael Clegg (1966) lost no time in exploiting this 'throw-away' opportunity. Derek Whiteley (1977) added considerably and imaginatively to this genre, demonstrating the relative effectiveness of a range of potential death-trap receptacles, including crisp packets, ring-pull cans and an assortment of plastic litter. Entomologists soon adopted this method for collecting and recording beetles, which were presumably attracted by the bottles' decaying contents (Lee, 1977). Litter collecting exercises undertaken by community groups and natural history societies around our region have produced many small mammal records though sadly few of these activities have been written up. Since the old style wide necked milk bottles were by far the most productive receptacles for small mammal remains, the hey-day of this methodology may have waned due to the advent of the less accessible narrow necked modern equivalents.

HISTORY AND ANALYSIS OF HUMANE 'LIVE TRAPPING'

The invention and development of the 'Longworth Live Trap' (Chitty & Kempson, 1949) revolutionised small mammal studies, enabling specimens to be examined, marked, released back into the population and re-trapped. This opened up the way to investigations of territoriality, home range, seasonal movement, dispersal, weight variation and a range of breeding cycle and demographic studies. For the first time small mammal studies could share the possibilities and 'glamour' of bird ringing.

The acquisition of a set of traps by the York-based Yorkshire Mammal Group signalled the advent of a highly productive and continuing era of activity by this small group of dedicated and highly skilled enthusiasts. The first published report of this activity was Dennis Aspinall and Michael Thompson's (1973) analysis of a year-long study (9984 trap nights) at Howsham Wood near York. Subsequent long-term studies include those of the Forestry Commission plantation at Blackwoods, Wheldrake from 1971 to 1985, the results being reviewed in Sharp (1985) and Sharp and Wilson (1987), the plantation and hedgerow habitats at Hopewell House Farm, Knaresborough from 1980 to 1988 (Fraser, 1988) and at the experimental agroforestry plots at the Leeds University Farm, Tadcaster from 1991 to 1996, the results from which still await analysis.

The majority of trapping surveys undertaken by the group are, however, single weekend trapping sessions, often at Yorkshire Wildlife Trust nature reserves or similar sites and are mostly published in the YMG's journal *Imprint* (launched in 1983).

Figure 1 shows the relative importance of local, regional and national literature and unpublished theses in providing information on Yorkshire small mammal trapping studies, revealing that local publications have contributed some 80% of reports. Figure 2 provides a breakdown of local and regional sources showing that some 73% of these reports have been published in *Imprint*.

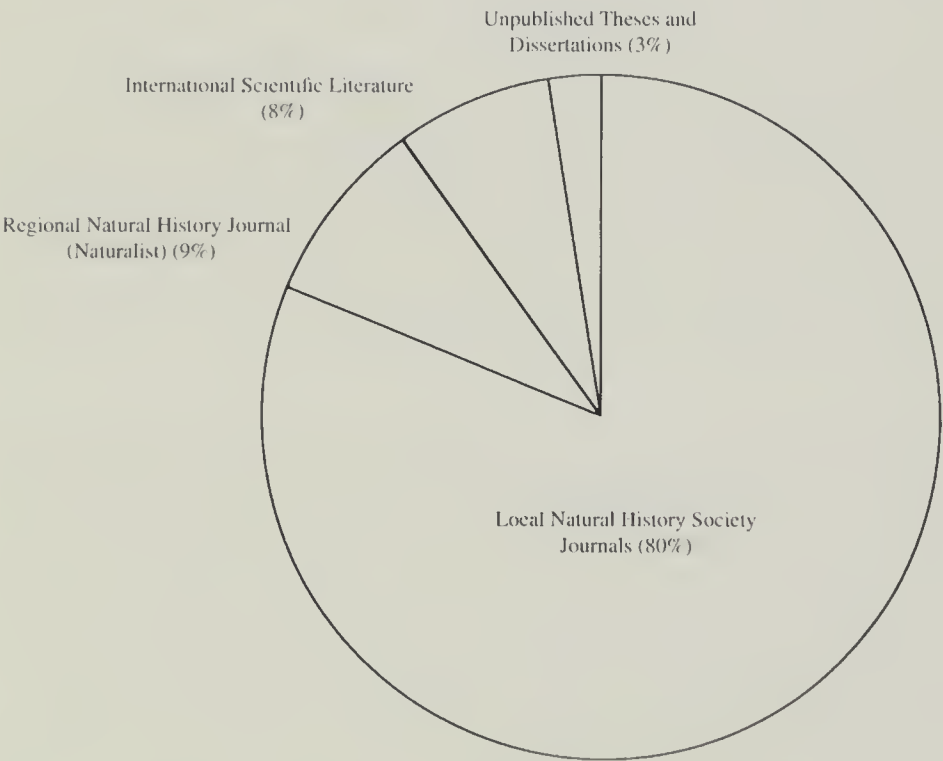


FIGURE 1
Sources of information on small mammal trapping studies in Yorkshire.

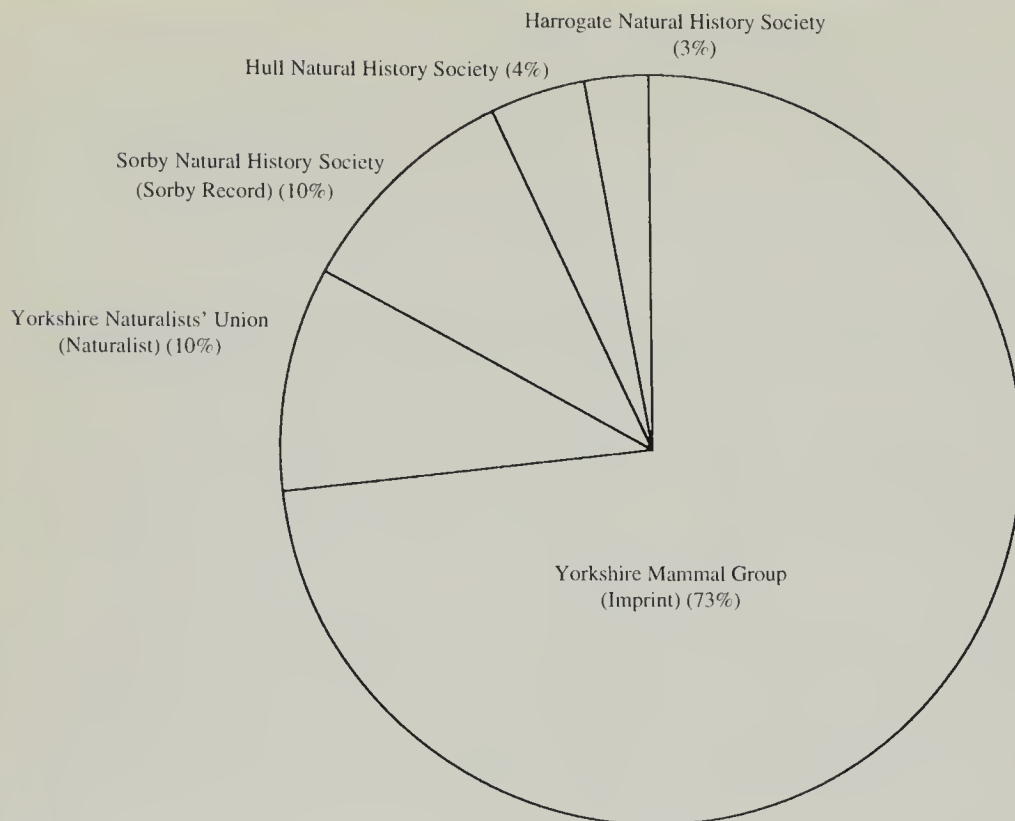


FIGURE 2

Contributions of local natural history societies to small mammal trapping studies in Yorkshire.

Table 1, which lists the number of citations from the sources consulted, shows that *Imprint* has published 52 small mammal trapping studies. The following bibliography (see Appendix 1) and catalogue of trap sites (see Table 2) provide a glowing tribute to the huge contribution the YMG and its journal have made to small mammal studies in Watsonian Yorkshire. The YMG's co-operation with other natural history societies from the late 1970s, notably at Harrogate and Sheffield, spread the expertise and triggered independent bouts of fieldwork and series of publications. More recently the Hull Natural History Society has commenced publishing its own studies.

TABLE 1
Digest of Sources of Yorkshire Mammal Trapping Records.

Sources	No. of citations
<i>Imprint</i>	52
<i>Sorby Record</i>	7
<i>The Naturalist</i>	7
<i>Journal of Zoology</i>	4
Hull Natural History Society	3
Harrogate Naturalists' Society	2
Unpublished Theses and Dissertations	2
<i>Yorkshire Mammals</i> (Delany 1985)	2
<i>Acta Theriologica</i>	1
<i>Aspects of Applied Biology</i>	1

Figure 3 plots the changes in mammal trapping effort as demonstrated by numbers of reports published per five-year period from 1960 to 1997. The genre peaked between 1985 and 1989 with 31 papers published, 13 of these in 1988. Although significant numbers of trapping records were available up to the early 1980s to be used in the 'Atlas of Yorkshire Mammals' (Howes, 1983) and *Yorkshire Mammals* (Delany, 1985), much of the current bibliography post-dates these landmark publications, indicating that a new review of the biology and ecology of small mammals in Yorkshire may be justifiable.

BIBLIOGRAPHY AND INDEX OF SITES

The following numbered bibliography (see Appendix 1) is presented here to facilitate access to this disparate resource and to encourage the use and analysis of this substantial body of information.

Table 2 gives an alphabetical index to over 40 small mammal trapping localities in Watsonian Yorkshire and in providing the reference numbers to the bibliography, forms a key to research and information on each site.

An additional bibliography on the methodologies associated with bottle trapping, pitfall trapping and aspects of live mammal trapping is provided after the numbered bibliography.

ADDITIONAL SOURCES

Although substantial, this body of information undoubtedly represents the proverbial 'tip of an iceberg'. Additional reports will inevitably exist in the files of various local natural history organisations, Nature Reserves, Country Parks, Local Authority Countryside Services and Museums around the Yorkshire region.

Since small mammal trapping exercises have periodically featured in student research projects, the resultant data should be present in academic dissertations and theses archived in the libraries of Colleges and Universities. Only two theses, Gibson (1981) and Scott (1974), are included in this bibliography but separate contact with academic institutions would undoubtedly show this to be a worthwhile source.

Thanks are due to Ann Hanson and Michael J. A. Thompson for commenting on the

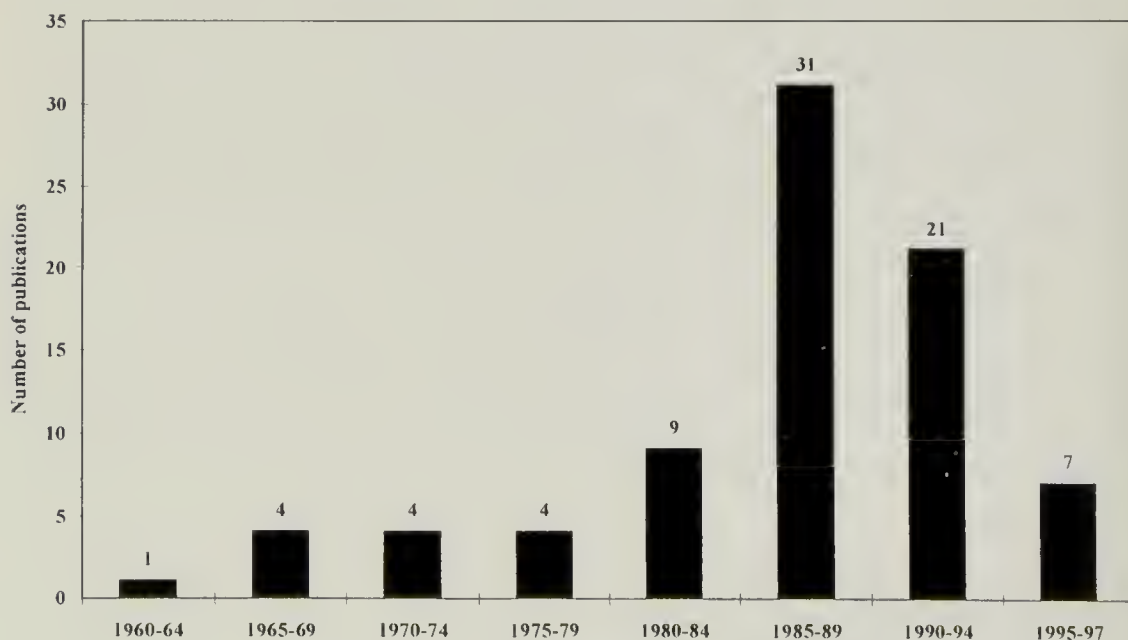


FIGURE 3
Numbers of papers on small mammal trapping studies in Yorkshire per five year period 1960 to 1997.

TABLE 2

Alphabetical Index to Mammal Trapping Localities with Bibliography Reference Numbers.

Localities	Bibliography Nos.
Askham Bog, York	73
Beavers Dyke, Harrogate	19
Beeley Wood, Sheffield	2
Bishop Monkton Ings	17
Bishop Thornton	17
Blackwoods, Wheldrake	57, 59
Chafer Wood, Pickering	37, 77
Clifton Moor, York	29
Cloughton, Scarborough	52
Cropton Forest, Pickering	63
Doncaster & Wakefield Collieries	11
Escrick, York	81
Filey Dams, Filey	38, 58, 62, 67, 78
Foss Islands Reserve, York	51
Garbutt Wood, Thirsk	49
Gouthwaite Reservoir, Nidderdale	15, 49
Goxhill, Holderness	47
Harrogate area	15, 16, 17, 19, 20, 61, 65, 71, 75
Haverah Park, Harrogate	19
Hay-a-Park, Harrogate	19
High Batts Nature Reserve, Ripon	20, 61, 65, 71, 75
Hob Moor, York	27
Holgate Beck, York	26.
Hopewell House Farm, Knaresborough	18, 19, 21, 45, 55, 56, 68, 72
How Hill Farm, Fountains Abbey	17
Howsham Wood, nr. York	1
Jeffrey Bog, Kirkham Priory	25
Kiplingcotes Quarry, East Yorks.	43
Leeds University Farm, Tadcaster	22, 24, 30, 34, 36, 39, 40
Limb Valley, Sheffield	3, 53
Lindholme Moor, Doncaster	41
Markington, Harrogate	17
Moorlands Nature Reserve	23, 54
North York Moors & Forestry	5, 35, 37, 49, 50, 63, 77
Northern Pennines	7
Peak District	80
Pennine woodlands	31, 32
Poppleton Church Graveyard	70
Potteric Carr, Doncaster	14
Pulfin Bog, Holderness	46
Rawcliffe Meadows, York	28
Rievaulx Abbey	66
Scotton, Harrogate	16
Sheffield region	2, 3, 4, 13, 14, 48, 53, 60, 79, 80
Skipwith Common	64
Spurn Peninsula	8, 9
The Humber Wildfowl Refuge	33
West Bank Park, Acomb, York	42
Wharnccliffe Wood, Sheffield	4, 60
Willow Garth, Knottingley	6, 69, 74
York area	1, 23, 25, 26, 27, 28, 29, 42, 51, 54, 57, 59, 70, 73, 81
Yorkshire Wolds	43, 76

references in *Imprint*. I would be pleased to hear of any additional sources to form the basis of a revised bibliography in due course.

APPENDIX 1

NUMBERED BIBLIOGRAPHY OF SMALL MAMMAL TRAPPING PROJECTS IN WATSONIAN YORKSHIRE

1. Aspinall, D. L. and Thompson, M. J. A. (1973). Small mammals of Howsham Wood. *Naturalist* **98**: 83-86.
2. Bowden, J. A. (1982). A study of wood mice in Beeley Wood. *Sorby Record* **20**: 28-31.
3. Bowden, J. A., Johnson, S. and Whiteley, D. (1984). The ecology of small mammals in the Limb Valley. *Sorby Record* **22**: 38-48.
4. Brackenbury, A. (1978). The best recorded square in Sheffield. *Sorby Record* **16**: 40-43.
5. Brown, R. W. (1985). Common shrew (*Sorex araneus*) and pygmy shrew (*Sorex minutus*) pp. 23-31, in Delany, M. J. (ed.) *Yorkshire Mammals*. University of Bradford, Bradford.
6. Burden, K. (1987). Willow Garth trap 24-26.4.1987. *Imprint* **9**: 18-20.
7. Butterfield, J., Coulson, J. C. and Wanless, S. (1980). Studies on the distribution, food, breeding, biology and relative abundance of the pygmy and common shrews (*Sorex minutus* and *S. araneus*) in upland areas of northern England. *J. zool., Lond.* **195**: 169-180.
8. Clegg, T. M. (1963). Observations on an East Yorkshire population of the house mouse (*Mus musculus* Linn.). *Naturalist* **88**: 39-40.
9. Clegg, T. M. (1965). Mammals of the Spurn Peninsula. *Naturalist* **90**: 87-90.
10. Clegg, T. M. (1965). Albinism of the tail-tip in the house mouse (*Mus musculus* Linn.). *J. zool., Lond.* **147**: 216-238.
11. Clegg, T. M. (1965). The House Mouse (*Mus musculus* Linn) in some south Yorkshire coal mines. *Doncaster Museum Publication No. 33*. Doncaster.
12. Clegg, T. M. (1966). The abundance of shrews as indicated by trapping and remains in discarded bottles. *Naturalist* **91**: 122.
13. Clinging, V. (1988). Urban rats and mice in the Sheffield area. *Sorby Record* **25**: 83-89.
14. Clinging, V. and Whiteley, D. (1980). Mammals of the Sheffield area *Sorby Record Special Series No. 3*. Sorby Natural History Society, Sheffield.
15. Counter, J., Damper, B. and Deaton, R. H. (1983). A Yorkshire first. [Small mammal trapping at Gouthwaite Reservoir 8-9.10.1983]. *Imprint* **2**: 6.
16. Counter, J., Damper, B. and Deaton, R. H. (1983). To prebait or not to prebait, that is the question! [Small mammal trapping on roadside verges near Harrogate and on the Nidd banks, Scotton]. *Imprint* **2**: 7.
17. Deaton, R. (1986). *Insectivorous mammals of the Harrogate district*. Harrogate Naturalists' Society, Harrogate.
18. Deaton, R. (1987). Field Studies Report 1987 – Hopewell House Farm, Knaresborough, North Yorkshire 13-15.3.1987. *Imprint* **9**: 17.
19. Deaton, R. (1988). *Small rodents of the Harrogate district*. Harrogate Naturalists' Society, Harrogate.
20. Elleker, H. (1987). Field Studies Report 1987 – High Batts Reserve, Ripon 1.2.1987. *Imprint* **9**: 16.
21. Frazer, C. (1988). Field Studies Report 1988 – Hopewell House Farm Study. *Imprint* **11**: 2-11.
22. Fuller, K. (1991). Long term study of the agroforestry site at Leeds University farm near Tadeaster [initial trap 24.4.1991]. *Imprint* **17**: 6-8.
23. Fuller, K. (1991). York Environment Week Trap 25.5.1991 – Moorlands Nature Reserve near York. *Imprint* **17**: 9.
24. Fuller, K. (1992). Long term study of the agroforestry site at Leeds University farm near Tadeaster [second trap 13-14.10.1991]. *Imprint* **18**: 6-10.
25. Fuller, K. (1992). Jeffrey Bog near Kirkham Priory 13-14.10.1991. *Imprint* **18**: 10-11.

26. Fuller, K. (1992). York Green-sites Survey 23.2.1992 – Holgate Beck Corridor [bottle & drinks can survey]. *Imprint* **19**: 4.
27. Fuller, K. (1992). York Green-sites Survey 23.2.1992 – Hob Moor [bottle & drinks can survey]. *Imprint* **19**: 4.
28. Fuller, K. (1992). York Green-sites Survey 23.2.1992 – Rawcliffe Meadows [bottle & drinks can survey]. *Imprint* **19**: 4.
29. Fuller, K. (1992). York Green-sites Survey 23.2.1992 – Clifton Moor [bottle & drinks can survey]. *Imprint* **19**: 4.
30. Fuller, K. (1992). Long term study of the agroforestry site at Leeds University farm near Tadcaster [third trap 8-10.5.1992; fourth trap 18-20.7.1992]. *Imprint* **19**: 5-8.
31. Gibson, D. St. C. (1981). *The population ecology of small mammals in Pennine woodlands*. Unpublished Ph.D. thesis, University of Bradford.
32. Gibson, D. St. C. and Delany, M. J. (1984). The population ecology of small rodents in Pennine woodlands. *J. zool., Lond.* **203**: 63-85.
33. Hanson, A. (1993). The Humber Wildfowl Refuge 6-7.3.1993. *Imprint* **20**: 11-12.
34. Hanson, A. (1993). Long term study of the agroforestry site at Leeds University farm near Tadcaster [fifth trap 23-25.10.1992; sixth trap 16-18.4.1993; seventh trap 9-11.7.1993]. *Imprint* **20**: 12-23.
35. Hanson, A. (1994). Return to Ashberry Pastures – The Dennis Aspinall Memorial Trap 11-12.9.1993. *Imprint* **21**: 12-13.
36. Hanson, A. (1994). Leeds University farm agroforestry project [eighth trap 15-17.10.1993; ninth trap 15-17.4.1994]. *Imprint* **21**: 13-19.
37. Hanson, A. (1995). Chafer Wood: The Dennis Aspinall Memorial Trap 10-11.9.1994. *Imprint* **22**: 9-12.
38. Hanson, A. (1995). Filey Dams: The Dennis Aspinall Memorial Trap 19-20.8.1995. *Imprint* **22**: 13-18.
39. Hanson, A. (1995). Leeds University farm agroforestry project [tenth trap 7-9.9.1994; eleventh trap 21-23.4.1995]. *Imprint* **22**: 19-24.
40. Hanson, A. (1996). Leeds University farm agroforestry project [twelfth trap 3-5.11.1995; thirteenth trap 19-21.4.1996]. *Imprint* **23**: 9-17.
41. Hanson, A. (1997). Lindholme Island, Hatfield Moor – The Dennis Aspinall Memorial Trap 13-15.9.1996. *Imprint* **24**: 8-15.
42. Hanson, A. (1997). The small mammals of a suburban park [West Bank Park, Acomb 4-5.10.1996]. *Imprint* **24**: 15-16.
43. Hewer, R. (1994). Small mammal trapping at Kiplingcotes. *Hull Natural History Society Newsletter* **5**: 18-19.
44. Hewson, R. (1972). Change in the number of stoats, rats and little owls in Yorkshire as shown by tunnel trapping. *J. zool., Lond.* **165**: 427-429.
45. Hibbert, A. W. (1986). Small mammal records from Hopewell Farm in March 1986. *Imprint* **7**: 14-15.
46. Kirk, B. R. (1993). Small mammals at Pulfin. *Hull Natural History Society Information Sheet* **2**: 4-5.
47. Kirk, B. R. (1996). Small mammal trapping at Goxhill. *Hull Natural History Society Newsletter* **6**: 11-13.
48. Lazenby, A. S. (1988). House mice in milk bottles. *Sorby Record* **25**: 41.
49. Oxford, G. (1992). The Denis Aspinall Memorial Trap: Garbutt Wood 28-29.9.1991. *Imprint* **18**: 5.
50. Oxford, G. (1993). The mice of Ashberry Pastures 12-13.9.1992. *Imprint* **20**: 9-10.
51. Oxford, G. (1993). Foss Islands Reserve, York 17-18.10.1992. *Imprint* **20**: 10-11.
52. Pollard, R.S. (1972). Correspondence [small mammals trapped in a garden at Cloughton, North Yorks. 1960-69]. *Naturalist* **97**: 83.
53. Redgate, N. (1979). The distribution of small mammals in the Limb Valley. *Sorby Record* **19**: 55-61.
54. Scott, R. (1974). *The effect of nature reserve management on small mammal populations*

- at Moorlands, York.* Unpublished B.A. dissertation, Biology Department, University of York.
55. Sharp, C. (1984). Hopewell House Farm, Knaresborough: A report on the Demonstration Farms Project 1980-1984. *Imprint* **3**: 3-9.
56. Sharp, C. (1985). Field Studies Advisor's Report 1984: Hopewell House Farm. *Imprint* **5**: 3-4.
57. Sharp, C. (1985). Blackwoods: A weighty problem. *Imprint* **6**: 3-5.
58. Sharp, C. (1985). Water shrews at Filey. *Imprint* **6**: 12-13.
59. Sharp, C. and Wilson, K. A. (1987). Small mammal use of a managed secondary succession [Blackwoods, Wheldrake]. *Imprint* **9**: 4-9.
60. Thompson, M. J. A. (1987). Field Studies Report 1986 – Wharnccliffe Wood, Sheffield 25-27.4.1986. *Imprint* **8**: 6.
61. Thompson, M. J. A. (1987). Field Studies Report 1986 – High Batts Nature Reserve, Ripon 25.5.1986. *Imprint* **8**: 6.
62. Thompson, M. J. A. (1987). Field Studies Report 1986 – Filey Dams 15.6.1986. *Imprint* **8**: 7.
63. Thompson, M. J. A. (1987). Field Studies Report 1986 – Cropton Forest 10-12.10.1986. *Imprint* **8**: 7-8.
64. Thompson, M. J. A. (1987). Field Studies Report 1986 – Skipwith Common 22-23.11.1986. *Imprint* **8**: 8-9.
65. Thompson, M. J. A. (1988). Field Studies Report 1987 – High Batts, Ripon 10-12.7.1987. *Imprint* **10**: 2.
66. Thompson, M. J. A. (1988). Field Studies Report 1987 – Rievaulx Abbey 25-26.7.1987. *Imprint* **10**: 2-3.
67. Thompson, M. J. A. (1988). Field Studies Report 1987 – Filey Dams 9.8.1987. *Imprint* **10**: 3.
68. Thompson, M. J. A. (1988). Field Studies Report 1987 – Hopewell House Farm, Knaresborough 18-20.9.1987. *Imprint* **10**: 3.
69. Thompson, M. J. A. (1988). Field Studies Report 1987 – Willow Garth, Knottingley 17-18.10.1987. *Imprint* **10**: 4.
70. Thompson, M. J. A. (1988). Field Studies Report 1987 – Poppleton Church Graveyard -.11.1987. *Imprint* **10**: 4.
71. Thompson, M. J. A. (1988). Field Studies Report 1988 – High Batts Nature Reserve 20-21.2.1988. *Imprint* **11**: 14-15.
72. Thompson, M. J. A. (1988). Field Studies Report 1988 – Hopewell House Farm, Knaresborough 26-27.3.1988. *Imprint* **11**: 15-16.
73. Thompson, M. J. A. (1988). Field Studies Report 1988 – Askham Bog YWT Nature Reserve 16.4.1988. *Imprint* **11**: 16.
74. Thompson, M. J. A. (1989). Field Studies Report 1988 – Willow Garth, Knottingley 21-22.5.1988. *Imprint* **12**: 11-12.
75. Thompson, M. J. A. (1989). Field Studies Report 1988 – High Batts, Ripon 30-31.7.1988. *Imprint* **12**: 12.
76. Tinklin, R. and Boone, G. C. (1988). Importance of hedgerow structure in determining the occurrence and density of small mammals. *Aspects of Applied Biology* **16** (1988); [pages not known]. [Study undertaken on the Yorkshire Wolds].
77. Whitehead, J. (1990). Chafer Wood Trap 9-10.9.1989. *Imprint* **14**: 10-11.
78. Whitehead, J. (1993). Fieldwork Report 1992 – Trap at Filey Dams 22-23.8.1992. *Imprint* **20**: 7-8.
79. Whiteley, D. (1978). Small mammals in disearded litter in the Sheffield area *Sorby Record* **16**: 44-47.
80. Whiteley, D. and Yalden, D. W. (1976). Small mammals in the Peak District. *Naturalist* **100**: 89-101.
81. Zhang, Z. and Usher, M. (1991). Dispersal of woodmice and bank voles in an agricultural landscape. *Acta theriol.* **36**: 239-245. [Study undertaken near Eserick, York].

UNSPECIFIED OR GENERAL

Delany, M. J. (1985) *Yorkshire Mammals*. University of Bradford.

Howes, C. A. (1983) An atlas of Yorkshire mammals. *Naturalist* **108**: 41-82.

METHODOLOGY

Boonstra, R. and Krebs, C. J. (1978). Pitfall trapping of *Microtus townsendii*. *Journal of Mammalogy* **59**: 136-148.

Bridgwater, D. and Sunderland, M. (1966). The contents of discarded bottles as evidence of the distribution of small mammals. *Naturalist* **91**: 84-85.

Chitty, D. and Kempson, D. A. (1949). Prebaiting small mammals and a new design of live trap. *Ecology* **30**: 536-542.

Delany, M. J. (1974). *The Ecology of Small Mammals*. Institute of Biology's Studies in Biology No. **51**. Arnold, London.

Flowerdew, J. R. (1976). Ecological Methods. *Mammal Review* **6**: 123-159.

Gurnell, J. (1980). The effect of prebaiting live traps on catching woodland rodents. *Acta theriol.* **25**: 255-264.

Gurnell, J. (1982). Index to theses and dissertations relevant to the biology of *Apodemus sylvaticus*, *A. flavicollis* and *Clethrionomys glareolus* held in British Universities. *Mammal Review* **12**: 143-145.

Gurnell, J. and Flowerdew, J. R. (1982). *Live trapping small mammals – A practical guide*. Mammal Society, Reading.

Lee, J. (1977). Some beetle species found in discarded bottles. *Sorby Record* **15**: 30-36.

Morris, P. A. and Harper, J. F. (1965). The occurrence of small mammals in discarded bottles. *J. zool., Lond.* **145**: 148-153.

Twigg, G. I. (1975). Catching mammals. *Mammal Review* **5**: 83-100.

Twigg, G. I. (1975). Marking mammals. *Mammal Review* **5**: 101-116.

BOOK REVIEWS

Provisional Atlas of the Aculeate Hymenoptera of Britain and Ireland. Part 2 edited by **R. Edwards**. Pp. 138. Biological Records Centre, Huntingdon. 1998. £6.00 paperback.

The second part of the *Aculeate Provisional Atlas* deals with 55 species, as did the first part, published in 1997. It is hoped that further parts, each dealing with about 55 species, will be published at two-year intervals. The maps and species profiles first appear in the Bees, Wasps and Ants Recording Society's *Newsletter*. With their forthcoming autumn issue the species for the third part of the provisional atlas will have been covered.

The main part of the *Atlas* gives a map and profile for each of the species. The maps show records for 10km squares from three time periods (pre-1900, 1900-1969, 1970 onwards to March 1998). The headings of the profiles are: General Notes (recognition, nomenclature, history of discovery and relevant literature), Distribution in Britain, Ireland and Overseas, Status in Britain only, Habitat, Flight Period, Pollen or Prey collected, Nesting Biology, Flowers visited and Parasites. The species profiles are based on an extensive review of the literature, unpublished knowledge and field experience, and, as such, are authoritative accounts. In particular, the bibliography is very extensive. The maps give the best information about the status of the species and are essential sources of information for Biodiversity Action Plans.

The second part of the *Provisional Atlas* is to be warmly welcomed and is a great credit to its editor and contributors.

MEA

Badgers by **John Darbyshire** and **Laurie Campbell**. Pp. 48, with 37 colour photographs. Colin Baxter Photography Ltd., Grantown-on-Spey. 1998. £8.00 paperback.

Badgers gives a simply written first-hand insight into the social life, biology and ecology of this fascinating mammal and discusses its status in the United Kingdom. The main contribution however is the truly superb collection of colour photographs by Laurie Campbell, the result of some two thousand hours spent patiently near badger setts and in badger feeding territory in all seasons. The photographs, in a league of their own, are reproduced to the highest technical standard by this specialist publisher. A royalty from the sale of this book will be donated to the Scottish Wildlife Trust. CAH

Seals and Sea Lions by **David Miller**. Pp. 72, with 41 colour photographs. Colin Baxter Photography Ltd., Grantown-on-Spey, Moray. 1998. £11.00 paperback.

Despite having suffered exploitation, in some cases to near-extinction, until recently, little was known about the social behaviour and lifestyles of these remote and enigmatic mammals. Techniques have now been developed enabling scientists to monitor these marine creatures in their own world. Although providing a solid read, peppered with up-to-date information, interpretation and statistics, the text, by a marine biologist with good research experience of British seals, is merely a vehicle for a veritable gallery of technically brilliant, highly imaginative and aesthetically ravishing photographic studies. The work provides a showcase for some 28 world class wildlife photographers, many from the Oxford Scientific Films stable. Personal favourites are Richard Nermann's sculptural textures of a bull northern elephant seal head; Jeff Foot's harbour seals swimming in a 'forest' of kelp and a group of northern sea lions off Round Island, Alaska; T. Kitchin and V. Hurst's harbour seal with twin pups on ice flows; Laurie Campbell's bull grey seal at rest in a rock pool and not least and demonstrating personal involvement by the book's publisher Colin Baxter, his superb portrait of two harbour seals 'perching' on a barnacle encrusted rock. Not expensive at £11, this work has moved photographic reproduction into a new league of excellence. CAH

Seasons of the Whale: riding the currents of the North Atlantic by **Erich Hoyt**. Pp. 104, with 75 colour photographs & 3 maps. Whale and Dolphin Conservation Society, Alexander House, James Street West, Bath BA1 2BT. 1998. £12.00 paperback.

First appearing in 1990 and now available in paperback, this lavishly illustrated work chronicles a year in the life of about a dozen humpback, blue, etc. whales moving through their migration cycles in the North Atlantic. In describing their biology, behaviour and encounters with a range of predators and prey, oil slicks and fishing nets, the work is engrossing and highly educational. This well thought out and beautifully written book brings the reader into intimate contact with whales and the broader issues of maritime conservation. It is highly recommended. CAH

Spatial Ecology. The role of space in population dynamics and interspecific interactions by **D. Tilman** and **P. Kareiva**. Pp. 368. Princeton University Press, Princeton. 1997. £25.00 paperback.

The movement of individuals, and consequently their genes, of different species of organism between sub-populations is a new and important area of ecology and has been termed metapopulation dynamics. This book is a collection of essays on the emerging field of metapopulation dynamics in population biology. All of the theoretical papers are highly mathematical and attempt to model the spatial dynamics of populations of organisms. This book is consequently a challenging 'read', even for those with a good mathematical grounding in this specialised area of ecology. ADH

BOTANICAL REPORT FOR 1997 FLOWERING PLANTS AND FERNS

Compiled by D. R. GRANT

19 The Wheatings, Ossett, West Yorkshire WF5 0QQ

The Recorders thank all those who have sent records. Nomenclature is according to Kent, D. H. (1992) *List of Vascular Plants of the British Isles* and Stace, C. A. (1991) *Flora of the British Isles*.

List of Contributors with their initials as used in the report:

P. P. Abbott (P.P.A.), M. Braithwaite (M.B.), C. Britton (C.B.), B. K. Byrne (B.K.B.), F. E. Crackles (F.E.C.), P. J. Cook (P.J.C.), J. Dews (J.D.), W. R. Dolling (W.R.D.), R. A. Eades (R.A.E.), D. P. Earl (D.P.E.), D. R. Grant (D.R.G.), M. Hammond (M.H.), F. G. Hardy (F.G.H.), B. Hartley (B.H.), C. Harrison (C.H.), P. Jepson (P.J.), J. Killingbeck (J.K.), S. King (S.K.), I. C. Lawrence (I.C.L.), J. Lucas (J.L.), J. Martin (J.M.), T. F. Medd (T.F.M.), D. Millward (D.M.), R. Middleton (R.M.), J. Moate (J.M.), A. Newton (A.N.), D. Proctor (D.P.), K. Pyne (K.P.), E. Thompson (E.T.), B. A. Tregale (B.A.T.), K. Trewren (K.T.), T. Schofield (T.S.), D. Walls (D.W.), M. Wilcox (M.W.), G. T. D. Wimore (G.T.D.W.), C. S. Yeates (C.S.Y.), Bradford Botany Group (B.B.G.) and Botanical Society of the British Isles (B.S.B.I.)

EAST YORKSHIRE (VC61) (F. E. Crackles)

*denotes a first vice-country record.

Stellaria neglecta A few plants on ditch bank, Heslington Tilmire 44/64 M.M.

Sagina maritima Humber flood defence bank at Easington 54/31 P.J.C.

**Rumex crispus* subsp. *littoreus* Welwick Saltmarsh 54/51 P.J.C. det. J. R. Akeroyd.

Lepidium campestre Abundant on disturbed road verge, near Kilnwick 44/94 P.J.C.

L. latifolium By the River Hull, Dunswell 54/03 J.D.

**Oenanthe pimpinelloides* About 70 plants on margin of the playing field associated with the Ennerdale Sport Centre, Hull; also a few plants on disturbed ground on nearby Stockholm Road 54/03 R.M. det. M. J. Southam. Not previously recorded north of Ipswich.

Petroselinum segetum On a ditch bank near Easington 54/31 P.J.C.

Torilis nodosa With Corn Parsley on a ditch bank near Easington 54/31 P.J.C.

Pyrosotis discolor Frequent on dry sandy grassland, Elvington airfield 44/64 M.H.

Plantago coronopus Edge of runway Elvington airfield 44/64 M.H.

Veronica montana Woodland at Roos 54/22 P.J.C. This species is rare east of the River Hull valley.

Orobanche minor In quantity on *Senecio greyii* in two gardens at Holme upon Spalding Moor 44/83 J.K. det. M. J. Rumsey and on *Anthyllis vulneraria* Priory Yard Sidings, Hull 54/02. R.M.

Arctium lappa Skipwith Common 44/63 and Burstwick 54/22 W.R.D.

**Centaurea nigra* x *C. jacea* = *C. x monktonii* Verge of bypass near Beverley 54/03 J.D. det. C. A. Stace.

Lactuca virosa Edge of runway Elvington airfield 44/64 M.H.

Taraxacum proximum Disused quarry Flinton 54/23 P.J.C. det. A. J. J. Richards.

**T. sinuatum* Hollym Carrs 54/32 P.J.C. det. A. J. Richards.

Potamogeton pusillus Shallow pool Elvington airfield 44/64 M.H.

Juncus maritimus Soke drain north of Long Bank, Easington 54/41 P.J.C. Second extant VC61 record.

Carex pseudocyperus Fen, Elvington airfield 44/64 M.N.

**Poa humilis* On a brick wall at Sledmere 54/96 M.B. Subsequently at Patrington 54/32 P.J.C. and on old brick walls in many places throughout Holderness and Beverley P.J.C.

- Parapholis strigosa* On salted roadside verge between Weeton and Welwick 54/32 W.R.D.
Alopecurus pratensis x *A. geniculatum* = *A. x brachystylus* Close to both parents in a marsh at Rolston, near Hornsea 54/24 P.J.C. A second VC61 record.
Bromus commutatus Edge of wheat crops, first near Tunstall 54/33 P.J.C. det. R. M. Payne and sub-sequently in 54/32, 54/22, 54/13 P.J.C.; also in 54/12 W.R.D., a total of 14 fields.
Epipactis helleborine Scrub, Brinkworth Rush, Elvington airfield 44/64 M.H.

NORTH-EAST YORKSHIRE (VC62) T. F. Medd

- Huperzia selago* Glaisdale Moor 45/70 K.T.
Equisetum sylvaticum Tranmire 45/71, Oxbank Wood 45/90, Hayburn Beck 54/09 K.T.
Equisetum telmateia Scackleton 44/67 T.F.M.
Ophioglossum vulgatum Clifton Moor (hundreds of spikes among bracken) 44/55 M.H. Farndale 44/69 K.T.
Asplenium adiantum-nigrum Hawnby Hill 44/59, Helmsley Castle 44/68, Gillamoor 44/69, Hayburn Wyke 44/59, Beck Hole 45/80 K.T.
Cystopteris fragilis Hawnby 44/59, Jugger Howe Beck 44/99 K.T.
Dryopteris affinis x *filiix-mas* = *D. x complexa* ssp. *complexa* Scugdale 45/40, near Moorsholm (2 sites) 45/61, near Lealholm 45/70, near Staithes and 2 sites near Liverton 45/71, near Grosmont & near Darnhome 45/80, near Runswick Bay 45/81, Rigg Mill Wood and 3 other sites 45/90: ssp. *lucida* Oxbank Wood 45/90 K.T.
Ceratophyllum demersum Marishes 44/87 M.H.
Trollius europaeus Scackleton 44/67 T.F.M.
Aconitum napellus Sutton Bank 44/48 BSBI Excn.
Atriplex littoralis Thornton Bridge 44/47, East Harsley 44/49 T.F.M.
Cerastium tomentosum Sand Hutton 44/65 YNU Bot. Sect. Excn.
C. diffusum Whitby Harbour 45/81 P.J.C.
Rumex crispus x *obtusifolius* = *R. x pratensis* Thirlby 44/48 BSBI Excn.
R. maritimus Scaling Dam Reservoir 45/71 I.C.L.
Salix pentandra Scackleton 44/67 T.F.M.
S. caprea x *cinerea* = *S. reichardtii* Sutton-under-Whitestoncliffc 44/48 BSBI Excn.
S. aurita x *cinerea* = *S. multinervis* Strensall Common 44/66 M.H.
Cochlearia danica Roadsides, A169 44/88 T.F.M., 44/89, 45/80 P.J.C. A 171, Hawkser 45/90 P.J.C.
Coronopus squamatus R. Hertford 54/08 M.H.
Anagallis tenella Jugger Howe Beck 44/99 YNU Excn.
Samolus valerandi Buttercrambe Moor Wood 44/75 T.S.
Senpervivium tectorum Boltby 44/48 BSBI Excn.
Sedum album Sun Beck 44/47 T.F.M.
Rubus scissus Pilmoor 44/47, Buttercrambe Moor Wood 44/75 D.R.G.
R. newbouldii Castle Howard Lake 44/77 D.R.G.
R. echinoides Sutton Bank 44/58 D.R.G.
Potentilla anglica x *reptans* = *P. x mixta* Roadside, Great Habton 44/77 T.F.M.
Rosa caesia x *canina* = *R. dumalis* Strensall Common 44/66 M.H.
**R. canina* x *stylosa* = *R. andegavensis* Strensall Common 44/66 M.H. (det. G. G. Graham).
R. canina x *sherardii* = *R. rothschildii* Strensall Common 44/66 M.H. (det. G.G.G.)
R. mollis Jugger Howe Moor 44/99 YNU Excn.
Trifolium striatum Thirlby 44/48 BSBI Excn.
Frangula alnus Pilmoor 44/47 D.R.G.
Anthriscus caucalis Thirlby 44/48 BSBI Excn.
Bernia erecta R. Derwent, Yedingham 44/87 M.H.
Apium inundatum Gormire 44/58 BSBI Excn.
Heracleum mantegazzianum Strensall 44/66 T.F.M.

- Menyanthes trifoliata* Pilmoor 44/47 D.R.G., Scackleton 44/67 T.F.M.
Ballota nigra Claxton 44/66 YNU Bot. Sect. Excn.
Scutellaria galericula Pilmoor 44/47 D.R.G., Castle Howard Lake 44/77 I.C.L.
Mentha arvensis Scaling Dam Reservoir 45/41 I.C.L.
M. aquatica x *spicata* = *M. x piperita* Scackleton 44/67 T.F.M. Grinkle Lane 45/71 I.C.L.
M. spicata x *suaveolens* = *M. villosa* Sand Hutton 44/65 YNU Bot. Sect. Excn.
Chaenorhinum minus Marishes 44/87 M.H.
Linaria repens x *vulgaris* = *L. x sepium* R. Hertford 54/08 M.H.
Melampyrum pratense Scar Wood, Harwood Dale 44/99 YNU Excn.
Pedicularis palustris Jugger Howe Moor 44/99 YNU Excn.
Doronicum pardalianches Sand Hutton 44/65 YNU Bot. Sect. Excn.
Potamogeton polygonifolius Jugger Howe Beck 44/99 YNU Excn.
P. pusillus Marishes 44/87 M.H. (Det. N. Holmes), Yedingham 44/97 M.H.
P. berchtoldii Clifton 44/55 M.H., Marishes 44/87 M.H. (det C. D. Preston) Yedingham 44/97 M.H. (det. N.H.), R. Hertford 54/08 M.H. (det. C.D.P.).
Zannichellia palustris Sandholme, North Kilvington 44/48 BSBI Excn., Rawcliffe 44/55, Marishes 44/87, Yedingham 44/97 M.H.
Acorus calamus Castle Howard Lake 44/77 T.F.M.
Juncus subnodulosus Buttercrambe Moor Wood 44/75 E.T.
Eriophorum latifolium Jugger Howe Moor 44/99 YNU Excn.
E. vaginatum Strensall Common 44/66 M.H.
Trichophorum cespitosum Jugger Howe Moor 44/99 YNU Excn.
Eleogiton fluitans Jugger Howe Moor 44/99 YNU Excn. (det. D.R.G.)
Schoenus nigricans Jugger Howe Moor 44/99 YNU Excn.
Carex pseudocyperus Buttercrambe Moor Wood (1 plant only) 45/75 T.S.
C. rostrata Jugger Howe Moor 44/99 YNU Excn.
C. pallescens Rawcliffe 44/55 M.H.
Puccinella distans Thornton Bridge 44/47 T.F.M.; Sand Hutton 44/65 YNU Bot. Sect. Excn.
Catabrosa aquatica R. Derwent, Marishes 44/87 M.H.
Calamagrostis epigejos Pimoor 44/47 D.R.G., Buttercrambe Moor Wood 44/75 T.S.
Allium oleraceum R. Ouse, York 44/65, Old Malton 44/77 M.H., Girsby 45/30 I.C.L.
A. scorodoprasum R. Ouse, York 44/65 M.H.

SOUTH-WEST YORKSHIRE (VC63) (D. R. Grant)

- Asplenium adiantum-nigrum* Addington Rly Br., Horbury, SE2917 D.R.G.
Ophioglossum vulgatum Near West Wood, Apperley Bridge. SE1937 T.S.
Claytonia perfoliata Mirfield. SE2019 J.L.
Euonymus europaeus Near Barnburgh. SE4803 T.S.
Rosa mollis Snow Gate Head, New Mill. SE4803 T.S.
R. sherardii near Jackson Bridge. SE1707 J.L.
Rubus schiocharis Spring Bank, Keighley. SE0539 D.P.E.
R. warrenii Brockadale, Kirk Smeaton. SE5116 D.R.G., Notton. SE3613 D.R.G.
R. rufescens Crane Moor. SE3001 T.S.
R. newbouldii Snow Gate Head, New Mill. SE1708 T.S.
R. scissus Canal bank, near Greetland. SE1021 T.S.
R. ulmifolius Lindrick Common, near Worksop. SK5482 D.R.G., near Sykehouse. SE 6416 D.R.G., Hessle Common, Wakefield. SE4216 T.S. and near Ackworth. SE4518 D.R.G.
R. armeniacus Harry Mann Dam, Cleckheaton. SE1925 T.S.
R. echinoides Hessle Common. Wakefield. SE4216 D.R.G.
Carum carvi Roadside near Dunford Bridge. SE1400 J.L.
Ballota nigra Bawtry. SK6593 E.T.
Atropa belladonna Criddling Stubbs. SE5220 D.P.
Humulus lupulus Canal near Greetland. SE0922 T.S.
Filago minima Old rly sidings, Normanton. SE3823 D.W.

- Cicerbita macrophylla* Eccleshill, Bradford. SE1836 B.H.
Potamogeton crispus River Aire, Carleton SD9750 T.S.
P. berchtoldii Canal Apperley Bridge. SE1937 T.S. and Stanley Ferry Flash Wakefield. SE3522 E.T.
P. pusillus Near Hatfield Peat Works SE7108 T.S.
P. perfoliatus River Idle, Bawtry. SK6593 D.R.G., River Aire, Stockbridge, Keighley. SE0642 T.S. and L. & L. Canal, Apperley Bridge. SE1937 T.S.
Acorus calamus L. & L. Canal, Silsden. SE0445 E.T.
Eleogiton fluitans Drain near Hatfield Peat Works. SE7108 E.T.
Carex otrubae Kiveton Park. SK4982 D.R.G.
C. elata Near Sykehouse. SE6417 T.S.
Epipactis palustris Chemical Works tip, Mirfield. SE2119 C.S.Y.

MID-WEST YORKSHIRE (VC64) (P. P. Abbott)

- Lycopodium clavatum* Upper Nidderdale. SE0976 B.B.G.
Ophioglossum vulgatum Bramham Park. SE4140 B.S.B.I.
Nuphar lutea Ripon Canal. SE3268 T.S.
Myosoton aquaticum Askham Bog, York. SE5647 M.H.
Spergularia rubra Woodside Quarry, Leeds. SE2537 M.W.
Rumex hydrolapathum Ripon Canal. SE3268 D.R.G.
Populus tremula Meanwood Valley, Leeds SE2836 K.P.
P. nigra ssp. *betulifolia* Poppleton. SE5653 K.P.
Ribes alpinum Waddington. SD7244 P.P.A.
 **Rubus robiea* Meanwood Valley, Leeds. SE2936 K.P. det. A. Newton.
 **R. gratus* Claude's Clough. SD8441 D.P.E.
 **R. rubritinctus* Gisburn Forest. SE7356 A.N.
 **R. rudis* Gisburn. SD8249 D.P.E.
Alchemilla glaucescens Dalehead. SD8471 D.M.
A. minima Near Twistleton Sear. SD6975 P.P.A.
Rosa obtusifolia Lees, Bowland. SD6644 B.S.B.I. det. R. Maskew.
Berula erecta Near Askham Bryan. SE5647 M.H.
Myosotis stolonifera Near Grimwith Reservoir. SE0563 P.P.A. and Stean. SE0873 P.P.A.
Clinopodium ascendens Knaresborough. SE3655 S.K.
Stacys x ambigua Hob Moor, Near York. SE5850 M.H.
Campanula glomerata Poppleton. SE5851 M.H.
Filago minima Woodside Quarry, Leeds. SE2537 M.W.
Potamogeton friesii Ripon Canal. SE3368 E.T.
P. polygonifolius Near Grimwith Reservoir. SE0563 P.P.A.
Groenlandia densa Austwick Beck, Austwick. SD7768 D.R.G.
Carex x pseudoaxillaris L. & L. Canal, Apperley Bridge. SE1838 B.S.B.I.
C. muricata ssp. *muricata* Gordale, Malham. SD96 P.J.
C. pseudocyperus Red House Wood. SE5256 E.T.
Calamagrostis canescens Knavesmire Wood, York. SE5948 M.H.
Allium vineale Poppleton. SE5851 M.H., Knavesmire Wood. SE59948 M.H.

NORTH-WEST YORKSHIRE (VC65) (T. F. Medd)

- Ranunculus lingua* Forett Park 45/11 YNC Excn.
Atriplex littoralis Thornton Bridge 44/47 T.F.M.
Polygonum cuspidatum Easby Abbey 45/10 YNU Bot. Sect. Excn.
Salix purpurea Forett Park 45/11 YNU Excn.
Rubus armeniacus Forcett Park 45/11 YNU Excn.
R. echinoides Easby Abbey 45/10 YNU Bot. Sec. Excn., Forcett Park 45/11 YNU Excn.
R. pruinosis Forcett Park 45/11 YNU Excn.
R. warrenii Healey, Masham 44/18 D.R.G.

R. dasyphyllus Richmond 44/19 YNU Bot. Sec Excn., Forcett Park 45/11 YNU Excn.
Rosa caesia Healey, Masham 44.18 D.R.G.
Potamogeton berchtoldii Forcett Park 45/11 YNU Excn.
Carex paniculata Forcett Park 45/11 YNU Excn.
C. riparia Forcett Park 45/11 YNU Excn.
Festuca arundinacea Richmond 44.19 YNU Bot. Sect. Excn.
Dactylorhiza purpurella Forcett Park 45/11 YNU Excn.

CASUALS AND ADVENTIVES (G. T. D. Willmore)

Berberis gagnepainii Peel Park, Bradford. SE1634 B.A.T.
Cannabis sativa Boat Farm Quarry, near Doncaster. SE5301 G.T.D.W.
Tetragonia tetragonoides Garden weed, Withernsea. P.J.C.
Bassia scoparia Albert Dock area, Hull. TA0927 G.T.D.W.
Amaranthus hybridus Albert Dock, Hull. TA0927 G.T.D.W.
A. retroflexus Goole Docks. SE7422 G.T.D.W.
A. thunbergii Goole Docks. SE7422 J.M.
Malva pulsilla Esholt Sewage Works tip. SE1739 B.A.T.
Lavatera thuringiaca Waste ground, Withernsea. TA3-2- P.J.C.
Citrullus lanatus Esholt Sewage Works tip. SE1739 P.P.A.
Cucurbita pepo Esholt Sewage Works tip. SE1739 B.A.T.
Brassica rapa ssp. *oleifera* West Hull Docks. TA0-2- R.A.E. det. P.J.C.
Hirschfeldia incana Albert Dock, Hull. TA0827 B.A.T.
Rapistrum rugosum East Hull Docks TA1-2- R.A.E. det. P.J.C.
Sedum spectabile Tithe Barn Plantation, near Doncaster. SE2506 G.T.D.W.
Astilbe japonica Cottingley, Bingley. SE1037 B.A.T.
Cotoneaster bullatus Bolton Lane, Bradford. SE1634 B.A.T.
C. rehderi Queens Road, Bradford. SE1634 B.A.T.
Trifolium incarnatum ssp. *incarnatum* Esholt Sewage Works tip. SE1739 B.A.T.
T. resupinatum Esholt Sewage Works tip. SE1739 P.P.A.
Vitis vinifera Esholt Sewage Works tip. SE1739 B.A.T.
Erodium crinitum Rothwell Haigh. SE3328 J.M.
Physalis alkekengi Micklefield. SE4432 P.P.A.
P. peruviana Esholt Sewage Works tip. SE1739 P.P.A.
Lycopersicon esculentum Esholt Sewage Works tip. SE1739 P.P.A.
Datura ferox Garden weed, Withernsea. TA3-2- P.J.C.
Cymbalaria pallida Withernsea TA3-2- P.J.C.
Pratia angulata Grassland, Myrtle Park Bingley. SE1039 C.H.
Leycesteria formosa Roos TA2-2- P.J.C.
Cardus pycnophalus Rothwell Haigh. SE334385 J.M.
Carthamus tinctorius Esholt Sewage Works tip. SE1739 P.P.A.
Tragopogon porrifolius Roadside verges in Holderness. TA2-3- W.R.D.
Grindela strista Cliff top, Sandend. NZ8-1- F.G.H.
Artemisia verlotiorum Near the Humber Bridge. TA0325 G.T.D.W.
Senecio cineraria Bolton, Bradford. SE1634 B.A.T.
Xanthium spinosum Lingwellgate, near Wakefield. SE234258 J.M.
Helianthus annuus Esholt Sewage Works tip. SE1739 P.P.A.
Galinsoga parviflora Goole Docks. SE7422 G.T.D.W.
Elodea nuttallii Pond near Withernsea TA3-2- P.J.C.
Asparagus officinalis ssp. *officinalis* On the sand dunes south of Kilnsea TA4-1- P.J.C.
Lolium temulentum Waste ground near Albert Dock, Hull. TA0927 B.K.B.
Eragrostis cilianensis Goole Docks. SE7422 G.T.D.W.
Panicum capillare Goole Docks. SE7422 G.T.D.W.
P. miliaceum Esholt Sewage Works tip. SE1739 P.P.A.
Echinochloa crus-galli Goole Docks. SE7422 G.T.D.W.

Setaria pumila Albert Dock, Hull. TA0927 G.T.D.W.

S. viridis Albert Dock, Hull. TA0927 G.T.D.W.

Cenchrus longispinus Albert Dock, Hull. TA0927 G.T.D.W.

Iris orientalis Roadside Harden, Bingley. SE0838 P.P.A.

BOOK REVIEWS

Mark Catesby's *Natural History of America* by **Henrietta McBurney**, with an introductory essay by **Amy R. W. Meyers**. Pp. 160, fully illustrated in colour & b/w plates. Merrell Holberton. 1997. £25.00 hardback.

A delightful picture of American wildlife as portrayed in evocative watercolours from the Royal Library, Windsor Castle by the English naturalist Mark Catesby (1682-1749). Original watercolours from which Catesby prepared etchings for his *The Natural History of Carolina, Florida and the Bahama Islands* (1747) are published here for the first time, each sympathetically supported by informative textual notes and covered under the following headings: birds; fishes; crabs, turtles and corals; snakes, lizards and frogs; mammals; insects; plants. Authoritative introductory matter is provided on Catesby's expeditions, artistic work and its publication, on the Windsor volumes, and on the natural history albums of Catesby's patron, Sir Hans Sloane, which contain some duplicates of his work. Detailed supporting notes, references and bibliographic material are also provided. All-in-all, a beautifully produced and modestly priced volume to grace a library shelf or coffee table.

MRDS

A Flora of Cumbria by **Geoffrey Halliday**. Pp. 611, with 17 figures, 1190 distribution maps & 113 colour plates, plus inside cover maps. Centre for North-West Regional Studies, University of Lancaster. 1997. Available from Summerfield Books, High Street, Brough, Kirkby Stephen, Cumbria CA17 4BX, £42.00 hardback, £32 softback (plus £4.90 postage & packing).

The latest work in the British tradition of providing high quality regional and county floras: Halliday and fellow contributors have given us not only with a lavish production but also an unparalleled corpus of information on the flora of northwest England, the outcome of 22 years of extensive fieldwork. It is the first Flora for Cumberland and Furness for a century and the first for Westmorland since 1938. The new Flora covers a region comprising vice-counties 69 and 70, together with parts of 65 (Sedbergh Rural District of North-west Yorkshire) and 60 (North Lancashire).

Systematic accounts of 1380 species of vascular plant are provided, 1190 of which are complemented by tetrad distribution points superimposed on colour maps delimiting four altitudinal zones; major rarities and other species which might be at risk are not mapped. Each account includes succinct but useful ecological information (including highest altitude to nearest 5 m of all species occurring above 100 m) which will be of considerable value to botanists in other regions of Britain. Keys are also provided for *Enphrasia*, *Hieracium* and *Rubus*. The Flora includes a substantial number of garden-escapes and planted species, and the nomenclature and sequence mainly follow those of Stace's (1991) *New Flora of the British Isles*.

Introductory chapters (77 pp.) are provided on: geology and scenery (D. A. Ratcliffe), a botanical tour of Cumbria (D. A. Ratcliffe & G. Halliday), vegetational history (W. Pennington), vegetation (D. A. Ratcliffe), three centuries of botanical recording (G. Halliday), Cumbria's changing flora (G. Halliday) and conservation (G. Halliday & D. A. Ratcliffe). The systematic accounts occupy almost 500 pages; other textual apparatus includes a gazetteer, tabulated information on losses and gains over previous surveys, a list of Red Data Book species, references and index.

This is a magnificent contribution to British botany and its large format and copious text encompass a wealth of information at a modest price.

MRDS

DONALD BRAMLEY BSc, CChem, MRSC, LTI
22.11.1919-26.8.1998

YNU Administrative Officer (1971-1994)



It was with great sadness that we learnt of the death of our good friend Donald Bramley who was known, and whose company was enjoyed by numerous Yorkshire naturalists through his role as administrative secretary of the Yorkshire Naturalists' Union, a position he occupied from 1971 to 1994.

A Bradford lad, Don was educated at the celebrated Salt's Grammar School for Boys, Saltaire, where he excelled in the sciences. Amongst his teachers there, the one he regarded as a seminal influence in his interest in the sciences was the noted Yorkshire naturalist, geologist, ecological botanist, cecidologist and arachnologist W. P. (Nick) Winter (1867-1950). On retiring as maths and science master, Winter passed his geological collection to the young Bramley, fostering his lifelong interest in mineralogy.

Don went on to study for an external London University degree at Bradford Technical College, obtaining a first class honours degree in chemistry at the precocious age of nineteen and a half. This was followed by a year of research (1939-40) at Leeds University into the molecular structure of fibres. Initially, and ignominiously as Don viewed it, the practical application of his research formed the basis of what, during the 1940s and 50s, was to become the hugely popular 'Toni' Home Perm preparation, thus changing the face, or at least the heads, of the nation.

During the Second World War Don's talents as a research chemist were placed at the service of the Admiralty, working in explosives establishments at Poole in Dorset and Caerwent in Monmouthshire. 1944 saw his marriage to Dorothy whom he had known since grammar school days.

With his experience of fibres (both hair and cordite), Don was recruited in 1945 by the artificial fibres giant 'British Nylon Spinners', working first in Coventry, then in Pontypool, South Wales. The Bramleys moved up to Doncaster in September 1955, Don joining the research and development staff of BNS (later to become ICI Fibres) developing the processes of blending nylon staple with natural fibres for use in the manufacture of such

products as hardwearing carpets and knitting yarn. Significantly in an economically stringent and environmentally conscious world, Don's invention made lucrative use of what would otherwise have been an industrial waste product. He was held in high esteem within his industry, serving for a period as secretary of the Textile Institute.

After early retirement in 1971, Don volunteered his services to Doncaster Museum as an amateur geologist. The offer was one of those astonishing godsend, both in filling a significant gap in the Museum's coverage of natural science and in giving Don a totally new direction in life. Through his personal qualities and enthusiasm for his subject, Don became greatly appreciated by his new colleagues, his skills and expertise being employed to excellent purpose in naming, cataloguing, re-organising and indeed adding to the geological collections, a legacy the Museum still enjoys.

Don developed interests in glacial erratics, the local brick industry and the lives of significant local geologists of the past such as William Sawney Bisat, Henry Culpin and Prof. T. H. Easterfield. He also helped to document several of the local geological sites, particularly the celebrated boulder clay pits at Balby (*South Yorkshire Studies in Archaeology and Natural History* (1973) 1:19-23).

In 1971 the Yorkshire Naturalists' Union was seeking a new Administrative Officer and knowing of Don's fascination for meeting interesting people, the Museum staff suggested he consider taking over this honorary post. With considerable trepidation he tentatively agreed, a move which was to shape life in the Bramley household for the next 27 years. He served as YNU Administrative Officer till 1994, then as Conservation Liaison Officer until his incapacitating illness earlier this year.

His most gentlemanly and subtly humorous manner has been a pleasure to YNU officers and members alike throughout this period. Don, with the staunch assistance of Dorothy his wife, was a devoted supporter of the YNU, attending and minuting council and business meetings irrespective of bad weather, in sickness and health for some 23 years. Indeed, both he and Dorothy were some of the most regular attenders at YNU field meetings and botanical section meetings for over two decades.

In 1968 his interests in minerals led him to assist in founding the 'Danum Lapidary Society', becoming its first chairman, a post he held till 1979, the Society conferring on him honorary life membership in 1984. 'Rock Hounding' and hill walking exploits formed the basis of many a family holiday, and ultimately of many a talk to a range of local natural history and other organisations. In the 1980s, to keep up to date with his science, Don even registered for a crystallography course at Sheffield University. Amongst his many other interests were boat building and sailing, and latterly the propagation of Fuchsias.

Through Dorothy, he had become deeply involved in family history studies, including investigations into the lives of Yorkshire naturalists. After years of arduous searches in archives and records offices, he declared that the Bramleys merely came from a long line of Nidderdale 'Ag. labs'. Perhaps for this reason he had maintained a strong affection for this valley, and for some years they would spend weekends at their caravan above Pateley Bridge. We recall one occasion when they invited us to spend a day with them in that area. Whilst Don was showing us the geological features, Dorothy was pointing out interesting wild flowers including Frog Orchid.

In 1977 Don and Dorothy, joined the Doncaster Naturalists' Society. From that year, Don served as geological recorder, the first Bramley allusion in the Society minutes referring to a collection of Triassic Sherwood sandstone pebbles collected on a DNS outing to the Sandbeck Estate being polished and sent as a gift to Lord Scarborough.

From 1980 to 1985 Don fitted snugly into the roles of President and Chairman, his amicable and humorous nature becoming the hallmark of a long and enjoyable era in the Society's history. From 1986 to 1989, making good use of his YNU connections, he operated as Programme Secretary, inviting a succession of YNU presidents and other officers to lecture to the Doncaster group.

Don had a remarkably agile mind and great enthusiasm for anything which took his interest. The violent weather which struck Yorkshire early in 1984, damaging the Bramley

greenhouse and other local landmarks, stimulated him to collect and catalogue evidence of storms and tempests which had ravaged the Doncaster district as far back as the early 1600s. This resulted in his fascinating paper, 'Bad weather from old records' (*The Doncaster Naturalist* (1984) 1(4): 78-79). His administrative role with the YNU made Don all too aware of the numerous environmental, conservation and government organisations only ever referred to by their initial letters, ITE, NERC, FWAG, RSNC, CoCo etc. Thus he wrote an amusing but highly instructive explanatory article, 'Abbreviations for Amateurs', unravelling these baffling acronyms for the enlightenment of the bemused naturalist (*The Doncaster Naturalist* (1985) 1(6): 133-136). His geological expertise contributed to various Doncaster Naturalists' Society site surveys, writing the geological background to the Society's publication *A Survey of Wadworth Wood, Doncaster* (1993).

Don has been a major, if often unsung, influence in Yorkshire natural history. A quietly spoken, genial, good-humoured and very likeable man, Don had a wonderful sense of irony and a wry and impish wit which could be put to very good effect in serious meetings or in the pub afterwards. He is greatly missed by all who had the pleasure and honour of knowing him.

C. A. Howes and P. Skidmore

CORRECTION

Regretably, several errors appeared in Geoffrey Fryer's paper in the last issue of *The Naturalist* (123: 117-118) between galley and page-proof stages for which the editor apologises.

The correct title should have read 'On J. W. Dunning's authorship of some early observations on Yorkshire Lepidoptera'; in addition, several typographical errors were introduced (e.g. for Beaumond read Beaumont, line 1) and a line was omitted: thus the first sentence of the second paragraph should read: It is now established that Dunning became a pupil at Peter Inchbald's school at Storthes Hall, near Huddersfield, in 1846, and it was from the Storthes Hall area that several of the records emanated at the appropriate time.

CONTRIBUTORS

- | | | | |
|------------------|----------------------------------|------------------|--|
| Abbott, P. P. | 18, 56-60, 162 | Gilbert, O. L. | 15-18 |
| Archer, M. E. | 3-13, 112, 137-147, 157 | Good, K. S. G. | 130 |
| Blackburn, J. M. | 42-43, 122-125, 128-129, 132-133 | Gramshaw, A. | 46 |
| Blockeel, T. L. | 122-125 | Grant, D. R. | 41, 43, 46, 48, 128, 131, 133, 135, 136, 159-164 |
| Claydon, P. | 44 | Grayson, A. | 132 |
| Coldwell, J. D. | 98, 132 | Headley, A. D. | 49-50, 56-60, 60-70, 76-85, 86-89, 89-98, 158 |
| Comley, J. R. | 38-48, 125-136 | Henderson, A. | 39-40, 45, 46, 126, 127, 129, 131, 135-136 |
| Cook, P. J. | 42, 130 | Howes, C. | 27-38, 101-102, 148, 149-157, 158, 165-167 |
| Crackles, F. E. | 159-160 | Hughes, M. | 60-70 |
| Crossley, R. | 99-100, 119-122 | Hull, S. L. | 19-24 |
| Densley, M. | 47 | Hunt, R. J. | 39, 42, 44, 46-47, 130 |
| Duncan, J. E. | 45-46 | Jeavans, M. | 60-70 |
| Eades, R. A. | 42, 132 | Johnson, C. A. | 125 |
| Foley, M. | 56-60 | Knight, D. G. E. | 54-56 |
| Fryer, G. | 117-118 | | |

- Limbert, M. 103-111
 Lindley, D. 134-135
 McCutcheon, D. E. 15-18
 Medd, T. F. 160-161, 162-163
 Middleton, R. 24-26
 Millward, D. 38-39, 127
 Newbould, J. A. 44, 129-130, 134
 Newlands, C. 70-75
 Norris, A. 13-14, 39, 113-117, 136
 O'Vastar, A. 135
 Pashby, S. 44
 Payne, J. 38-48, 125-136
 Payne, K. 38-48, 125-136
 Rumsey, F. J. 50-53, 76-85, 86-89, 89-98
 Saunders, J. B. 127-128
 Savage, D. P. 42, 131, 133-134
 Seaward, M. R. D. 14, 129, 131, 148, 164
 Skidmore, P. 112, 165-167
 Smith, H. 70-75
 Sykes, M. 131
 Taylor, I. 86-89
 Thompson, M. J. A. 40-41, 126-127
 Wardhaugh, A. A. 130, 133-134
 Willmore, G. T. D. 163-164
 Yeates, C. S. V. 44-45

INDEX

Book Reviews

13-14, 18, 112, 118, 136, 148, 157-158, 164

Botany

The plants of Hull: an electronic atlas, 24-26; Proceedings of the Broomrape conservation workshop, 49-98

Bryology

YNU Bryological section: annual report 1996-1997, 122-125

Diptera

Two species of marsh fly in the Barnsley area, 98; Entomological report: Diptera, 119-122

Fish

Basking sharks stranded on the Yorkshire coast, 101-102

Bymenoptera

A lifetime with wasps (Presidential address), 3-13; The cuckoo bees, Sphecodes, of Watsonian Yorkshire, 137-147.

Lepidoptera

On J.W.Dunning's authorship of some early observations in Yorkshire, 117-118

Lichenology

Lichen flora of Northumberland: supplement 1, 15-18

Mammals

A historical review of the otter in Nottinghamshire, 27-38; A history and bibliography of small mammal trapping studies in Watsonian Yorkshire, 149-157

Mollusca

A Yorkshire red data book for land and freshwater Mollusca 113-117

Obituaries

John Hallsworth Flint 1919-1997, 99-100; Donald Bramley, 1919-1998, 165-167

Ornithology

Alarm calls and predator discrimination in populations of the house sparrow in Leeds, 19-24

Orthoptera

A review of the genus *Metrioptera* in Yorkshire, 103-111

Yorkshire Naturalists' Union

Presidential address, 3-13; Excursions in 1996, 38-48; Excursions in 1997, 125-136



IRISH NATURALISTS' JOURNAL

The *Irish Naturalists' Journal*, successor to the *Irish Naturalist*, commenced publication in 1925. The quarterly issues publish papers on all aspects of Irish natural history, including botany, ecology, geography, geology and zoology. The *Journal* also publishes distribution records, principally for cetaceans, fish, insects and plants, together with short notes and book reviews.

Current subscription rates for four issues (including postage) are – £IR15.00 (£14.00stg); Students IR£4.00 (£3.50stg). Further details may be obtained from Ms Catherine Tyrie, Ulster Museum, Botanic Gardens, Belfast BT9 5AB.

Titus Wilson

Kent Works • Burneside Road • Kendal • Cumbria • LA9 4RL
Tel. 01539 720244

Specialist printers/binders of
Academic Journals, Catalogues and Private Publications

Our service includes attending to worldwide distribution

‘The Naturalist’ is available in microform

UNIVERSITY MICROFILMS INTERNATIONAL

For further information contact:
UMI, ATTN: Box 38, PO Box 1346,
300 North Zeeb Road,
Ann Arbor, MI 48106-1346,
USA

Latest publication of the Yorkshire Naturalists' Union
THE FRESHWATER CRUSTACEA OF YORKSHIRE
a faunistic & ecological survey
GEOFFREY FRYER

The crustacean fauna of Yorkshire reflects the great physiographic diversity of the region. Adopting an ecological approach, this book considers the Yorkshire fauna in relation to climate, topography, geology, soils and water chemistry, always keeping in mind that it is dealing with living organisms whose habits, requirements and physiological limitations determine exactly where they live.

Matters covered include the ecological background; faunal assemblages and their regional attributes; an analysis of the factors that determine distribution patterns, many of which are mapped; wide geographical aspects; and conservation. Large areas, such as the Pennines, Howgill Fells, North Eastern uplands and the lowland plains are surveyed. So too are localised regions including Whernside, the Malham area, lowland heaths, and the largest lakes, as well as habitats such as upland tarns, seepages, cold springs, small lowland ponds, inland saline waters. Notes are given on every species recorded, including parasitic forms.

Price £16.00 (plus £2.00 per copy p.&p.) Special offer to members of the Yorkshire Naturalists' Union £13.50 (plus £2.00 p.&p.)

Please make cheques payable to Yorkshire Naturalists' Union.

Available from: Professor M. R. D. Seaward, Department of Environmental Science, University of Bradford, Bradford BD7 1DP.

PUBLICATIONS FOR SALE

- A Fungus Flora of Yorkshire*. 1985. 296 pp. Hardback. £10.00 incl. p&p.
Butterflies and Moths of Yorkshire. 1989. 380 pp. Paperback. £17.50 incl. p&p. Unbound. £12.15 incl. p&p.
Mammals of Yorkshire. 1985. 256 pp. £7.50 incl. p&p.
Provisional Keys to British Plant Galls. 1986. 85pp. £5.50 incl. p&p.
First Yorkshire Lepidoptera Report in 'ARGUS' Spring 1997. £2.50 incl. p&p.
Moths and Butterflies of Spurn, 1995. 124 pp. £6 incl. p&p.

Cheques should be made payable to Y.N.U.

From: Mrs J. Payne, 15 Broad Lane, Cawood, Selby, North Yorkshire, YO8 3SQ
Telephone: 01757 268242



